

PRIOR ART

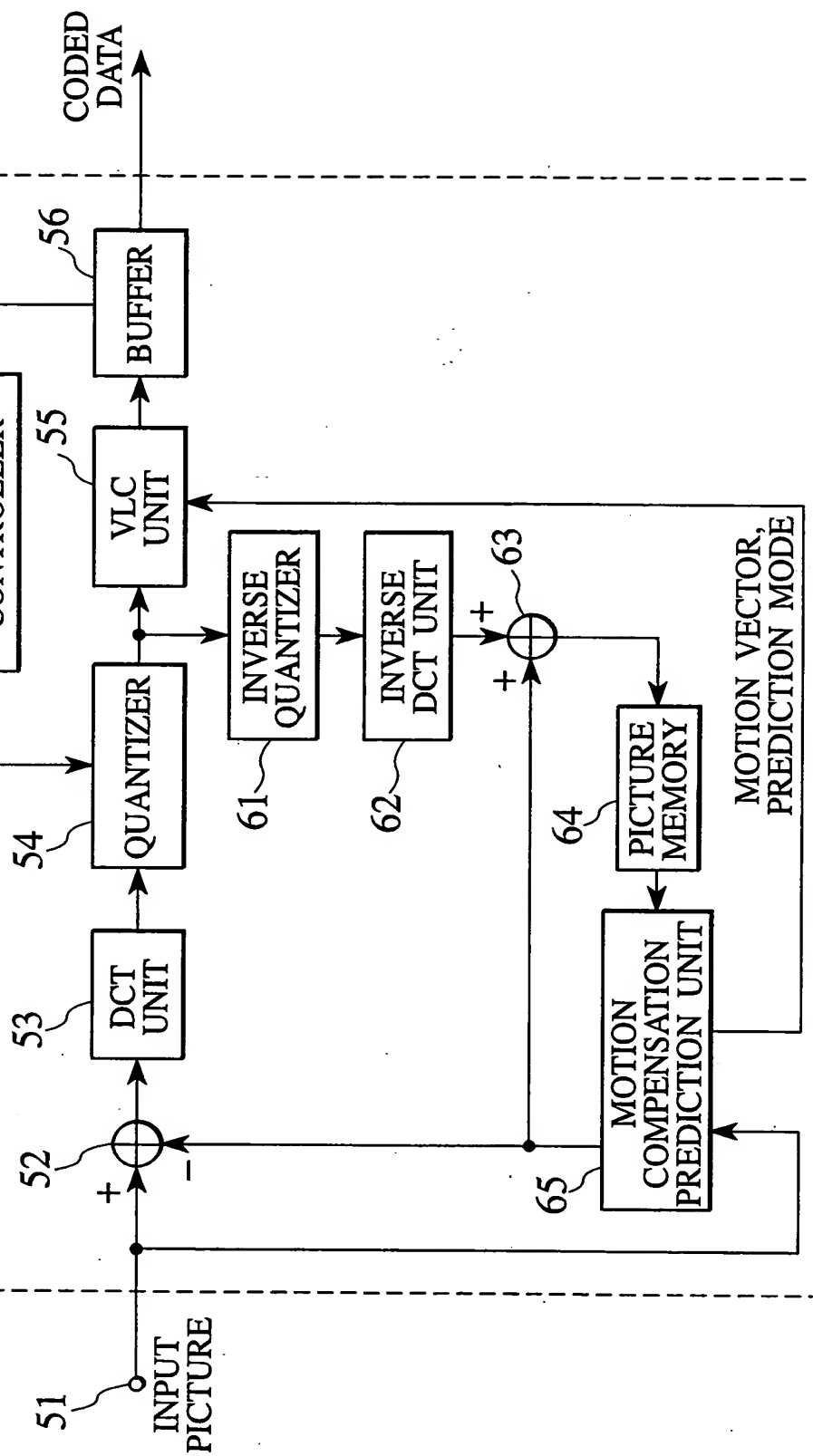


FIG. 2
PRIOR ART

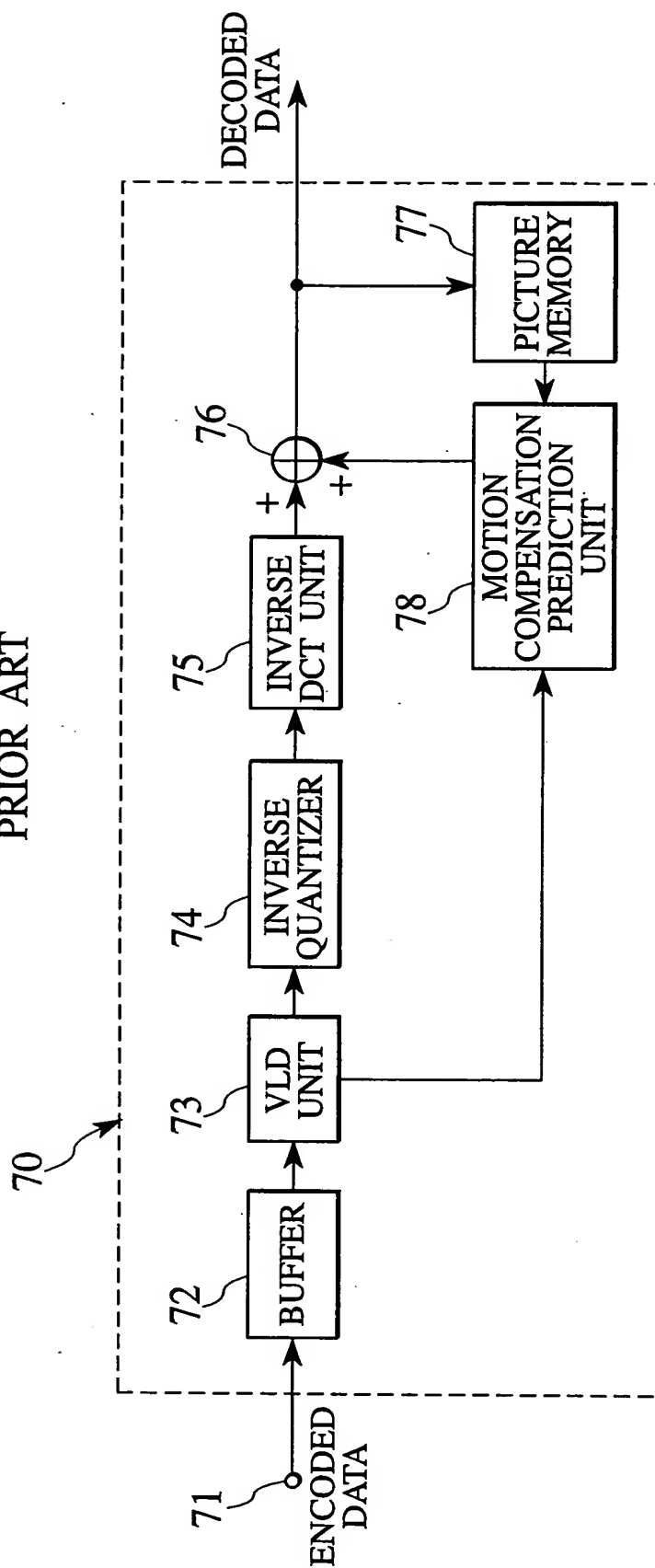


FIG.3
PRIOR ART

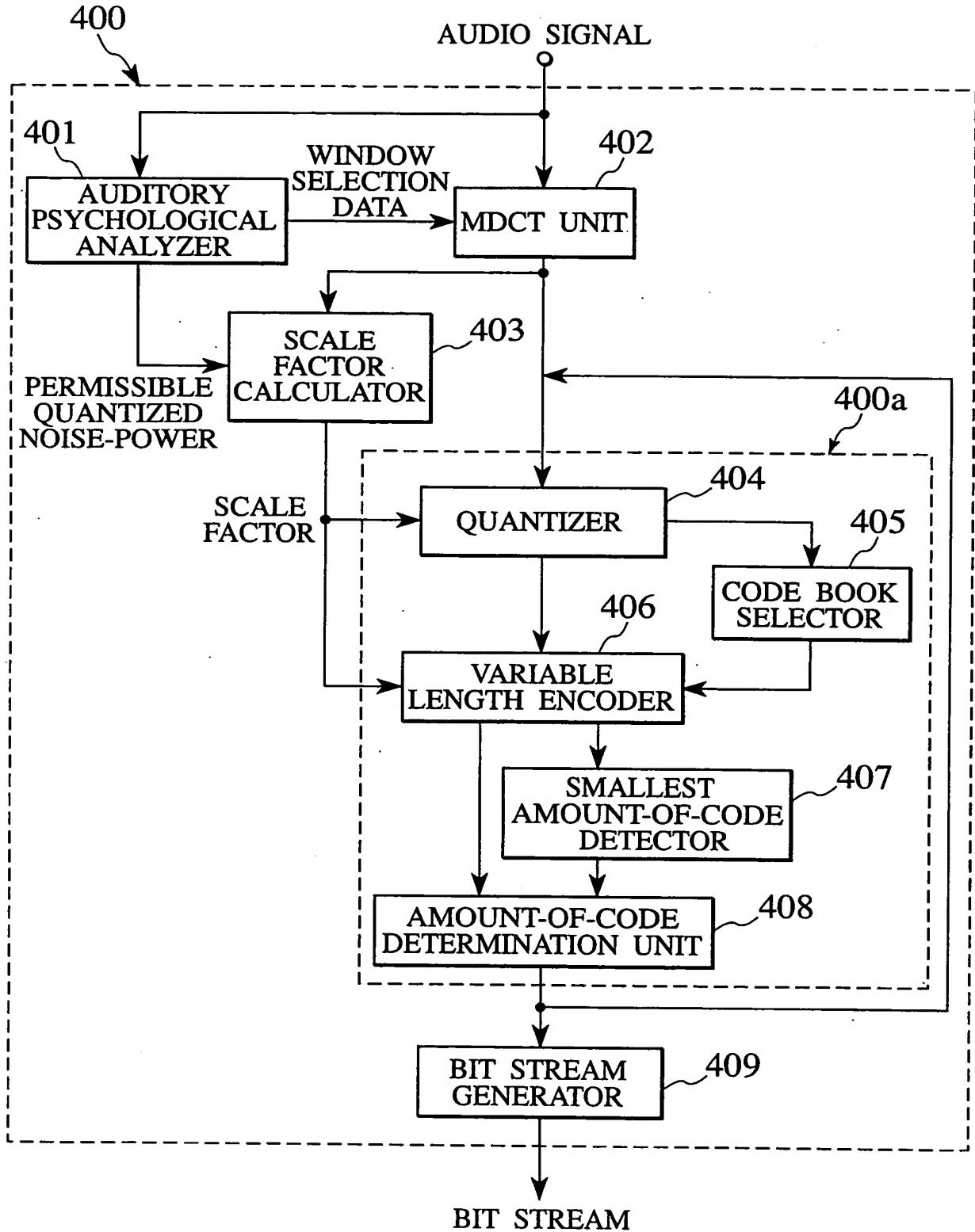


FIG.4
PRIOR ART

MAXIMUM QUANTIZATION VALUE	HUFFMAN CODE BOOK
$Q = 0$	0
$Q \leq 1$	1 or 2
$Q \leq 2$	3 or 4
$Q \leq 4$	5 or 6
$Q \leq 7$	7 or 8
$Q \leq 12$	9 or 10
$Q > 12$	11 (ESC)

FIG.5
PRIOR ART

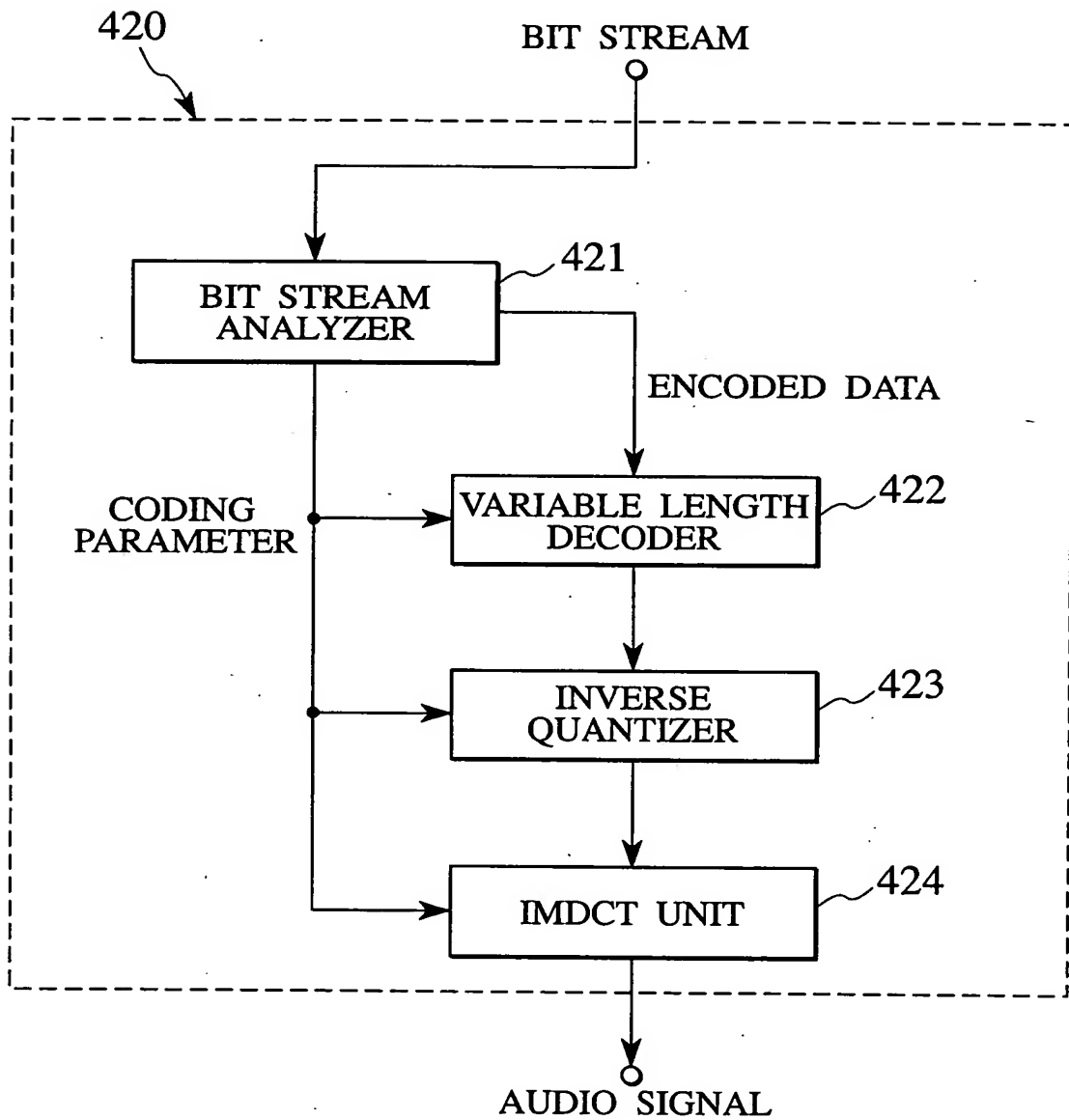


FIG. 6

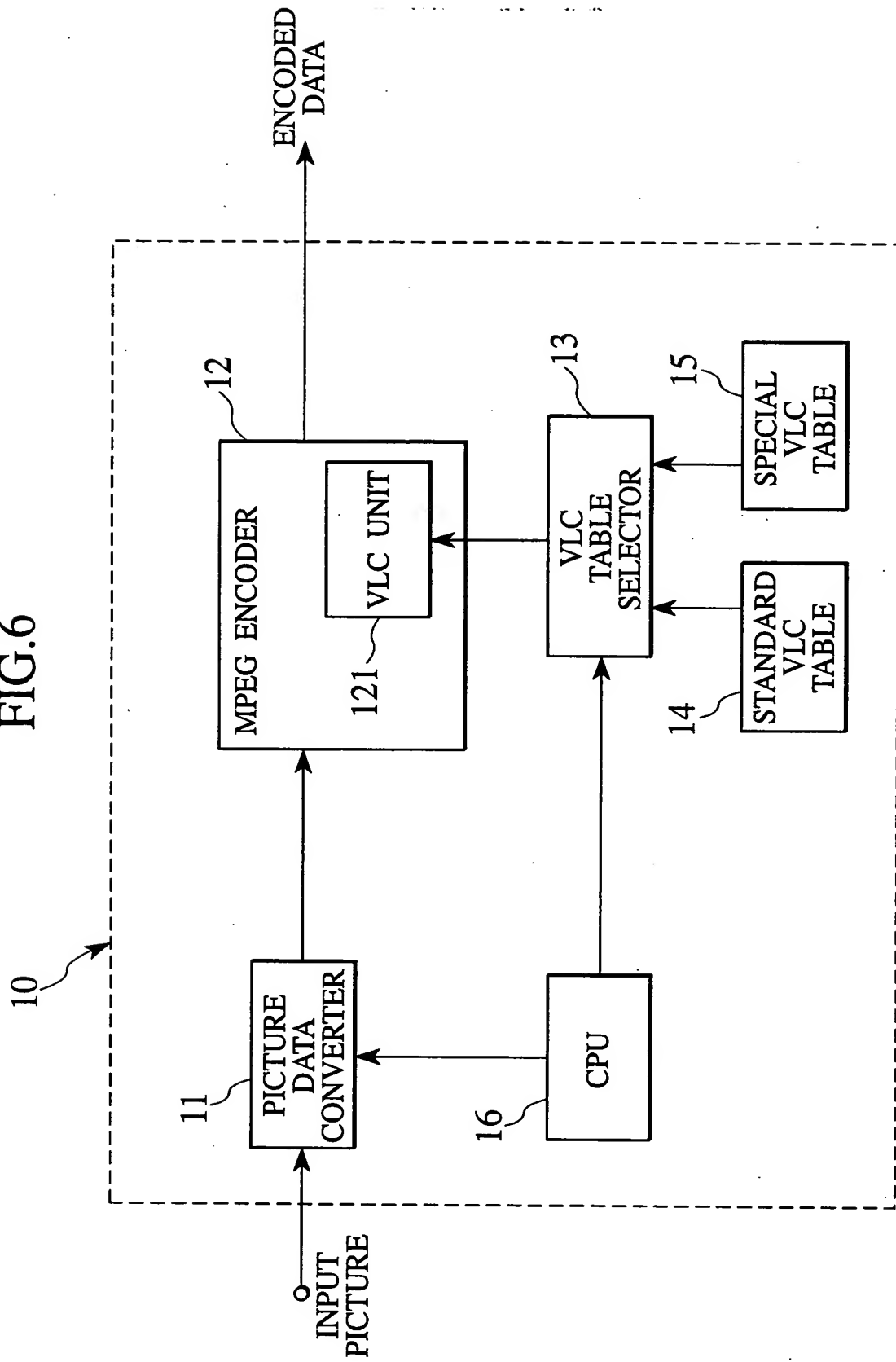


FIG. 7

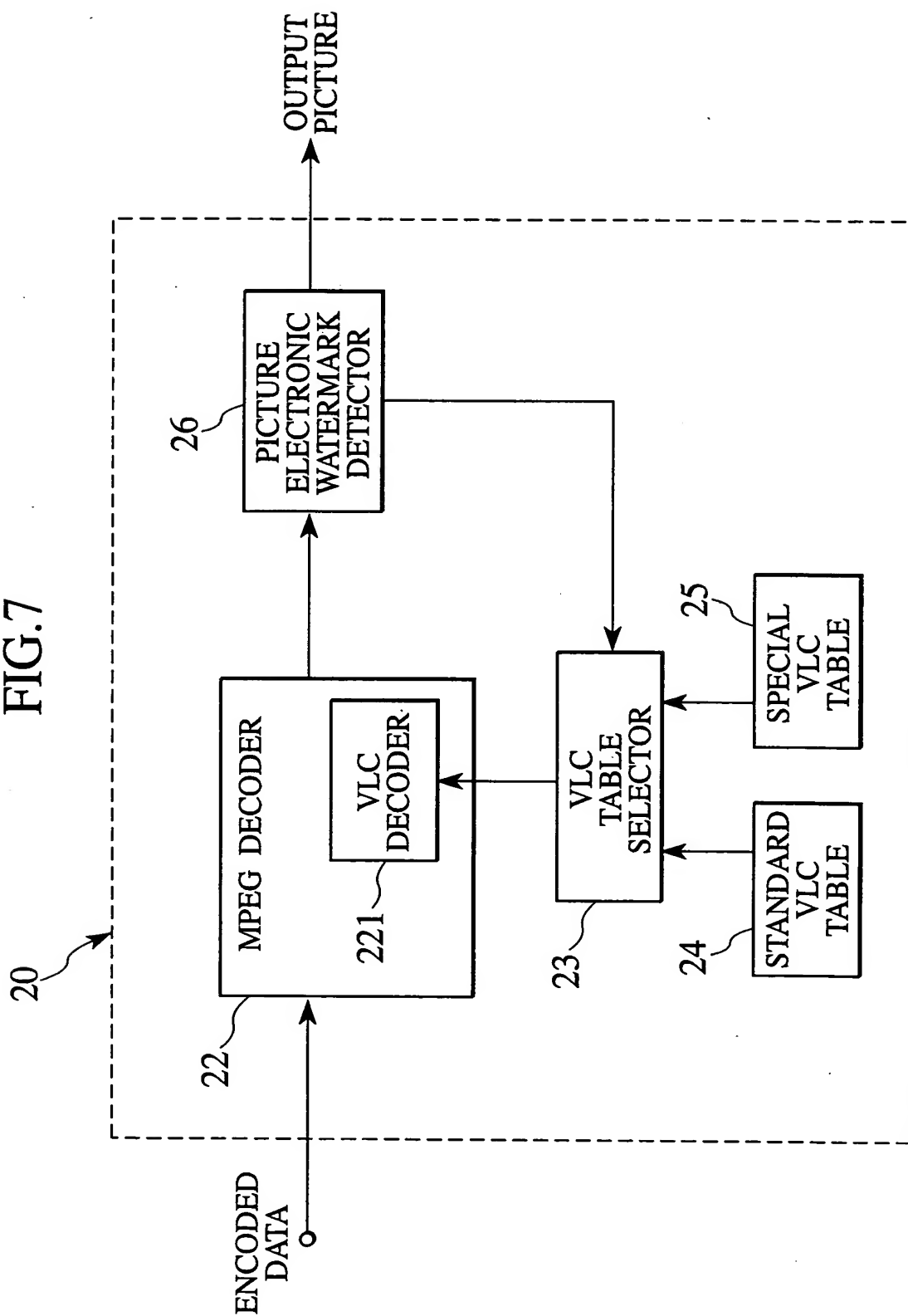


FIG. 8

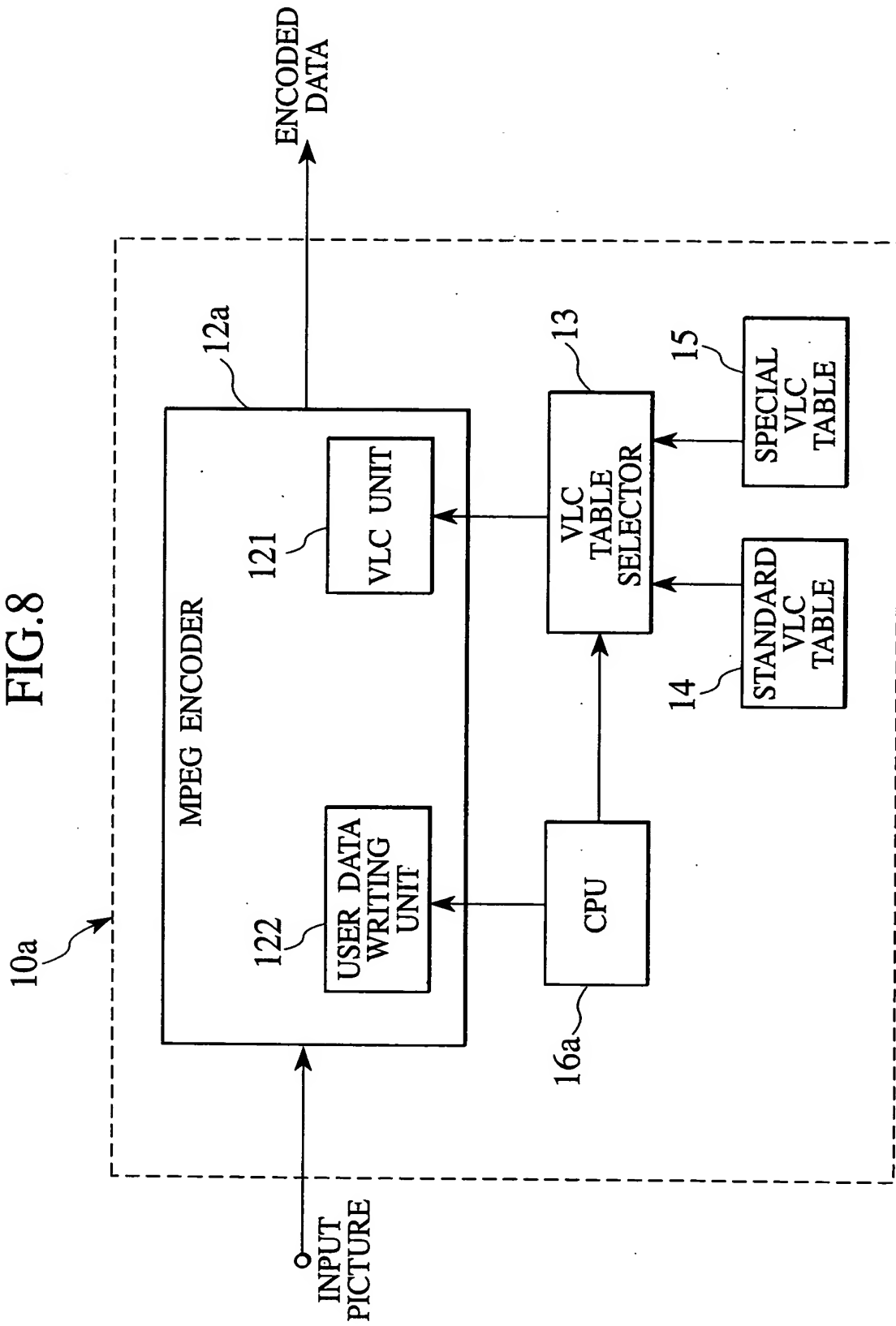


FIG.9

Sequence header

SYNTAX	BIT NUMBER
Sequence_header() {	
Sequence_header_code	32
Horizontal_size	12
Vertical_size	12
Pel_aspect_ratio	4
Picture_rate	4
Bit_rate	18
Marker_bit	1
Vbv_buffer_size	10
Constrained_parameters_flag	1
Load_intra_quantizer_matrix	1
if (load_intra_quantizer_matrix)	
Intra_quantizer_matrix []	8 * 64
Load_non_intra_quantizer_matrix	1
if (load_non_intra_quantizer_matrix)	
Non_intra_quantizer_matrix []	8 * 64
Next_start_code()	
if (nextbits() == extension_start_code) {	
Extension_start_code	32
While (nextbits() != '0000 0000 0000 0000 0000 0001') {	
Sequence_extension_data	8
}	
Next_start_code()	
}	
if (nextbits() == user_data_start_code) {	
User_data_start_code	32
While (nextbits() != '0000 0000 0000 0000 0000 0001') {	
User_data	8
}	
Next_start_code()	
}	
}	

FIG.10

Group of pictures layer

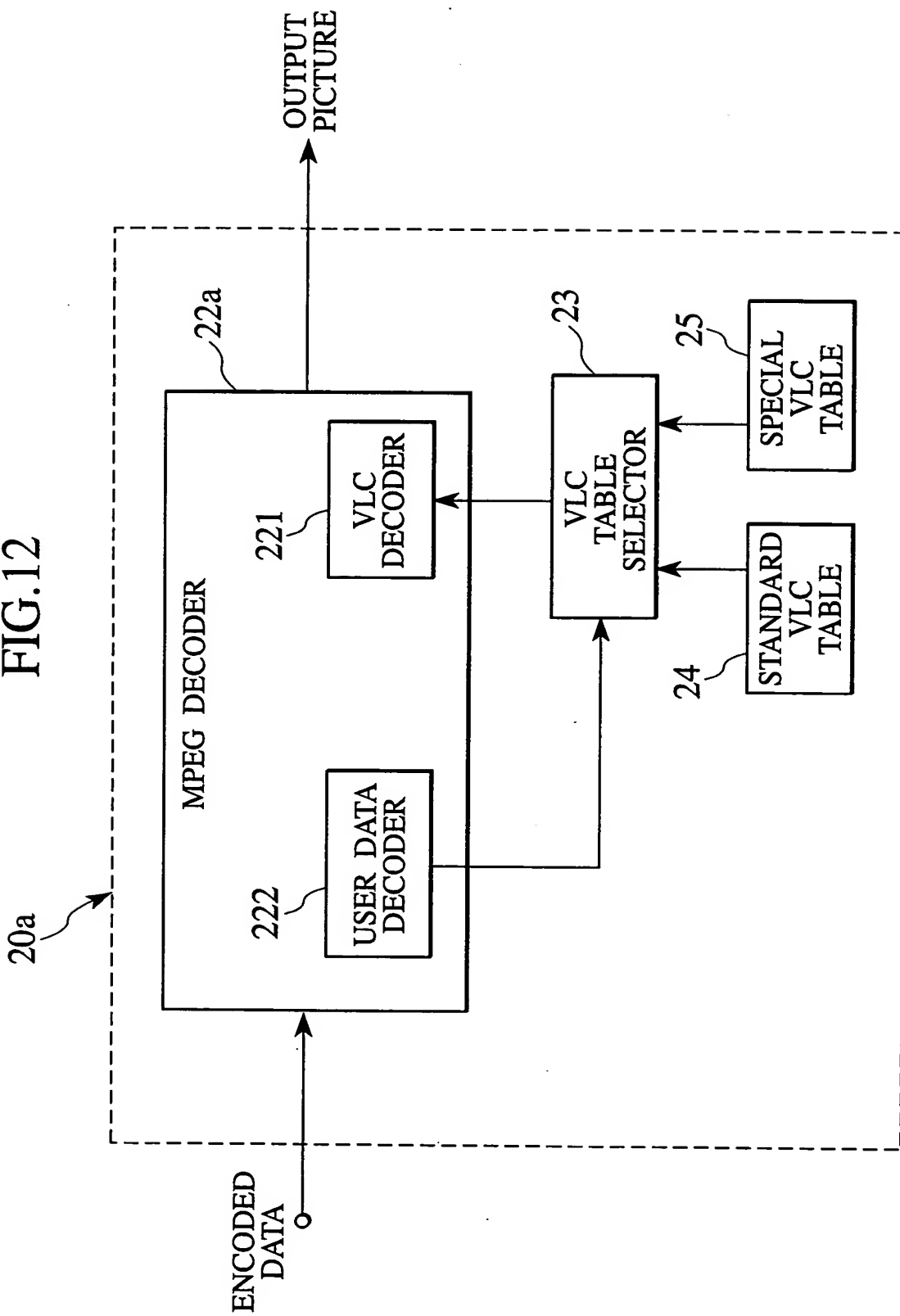
SYNTAX	BIT NUMBER
<pre> Group_of_pictures() { Group_start_code Time_code Closed_gop Broken_link Next_start_code() if (nextbits() == extension_start_code) { Extension_start_code While (nextbits() != '0000 0000 0000 0000 0000 0001') { group_extension_data } Next_start_code() } if (nextbits() == user_data_start_code) { User_data_start_code While (nextbits() != '0000 0000 0000 0000 0000 0001') { User_data } Next_start_code() } do { Picture() } While (nextbits() == picture_start_code) } </pre>	<pre> 32 25 1 1 32 8 32 8 </pre>

FIG.11

Picture layer

SYNTAX	BIT NUMBER
<pre> Picture() { picture_start_code Temporal_reference picture_coding_type vbv_delay if ((picture_coding_type = 2) (picture_coding_type = 3)) { full_pel_forward_vector forward_f_code } if (picture_coding_type = 3) { full_pel_backward_vector backward_f_code } while (nextbits() = '1') { extra_bit_picture extra_information_picture } extra_bit_picture next_start_code() if (nextbits() = extension_start_code) { extension_start_code while (nextbits() != '0000 0000 0000 0000 0000 0001') { Picture_extension_data } Next_start_code() } if (nextbits() == user_data_start_code) { User_data_start_code While (nextbits() != '0000 0000 0000 0000 0000 0001') { User data } Next_start_code() } do { Slice() } while (nextbits() = slice_start_code) } </pre>	<pre> 32 10 3 16 1 3 1 3 1 8 1 32 8 32 8 </pre>

FIG. 12



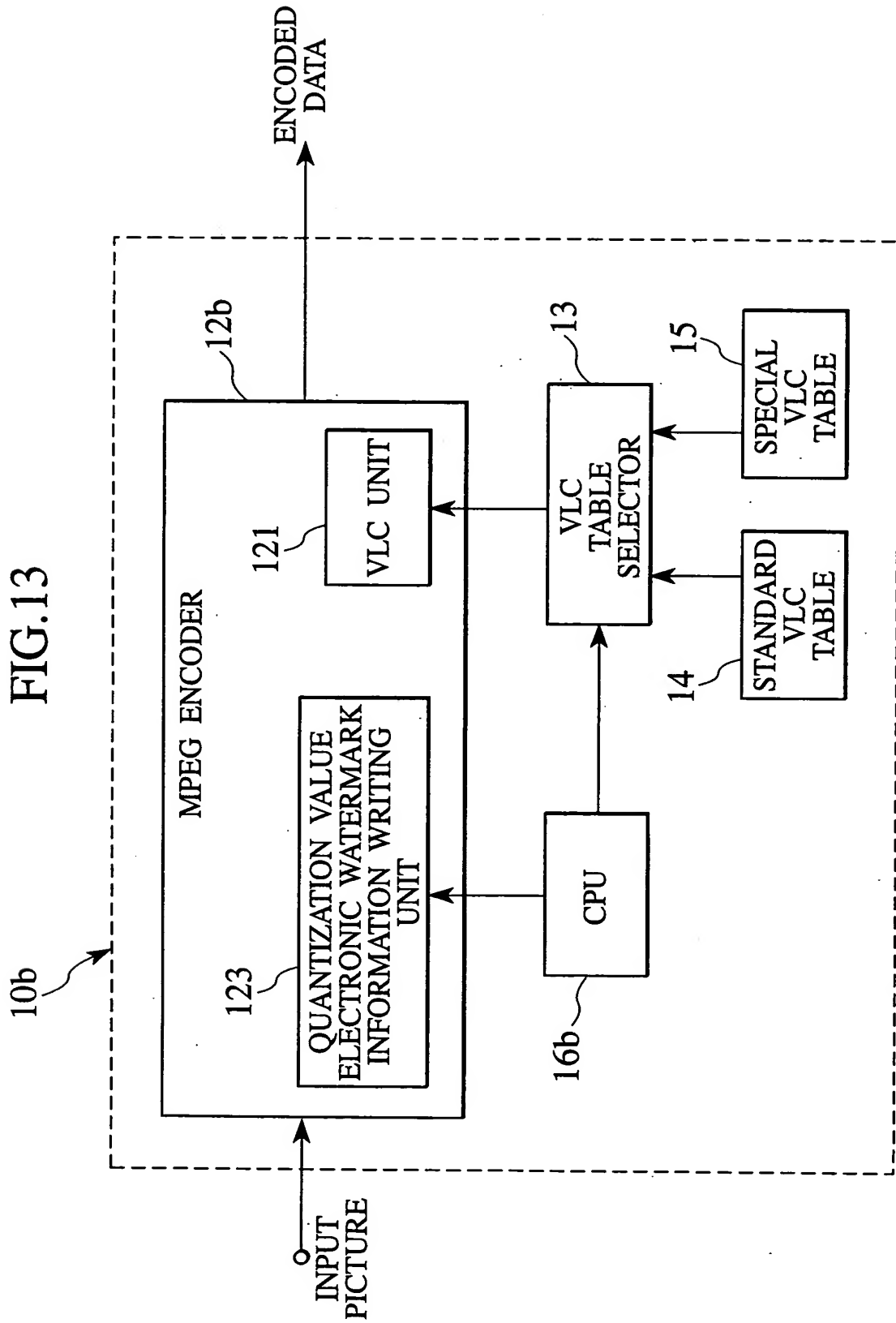


FIG.14

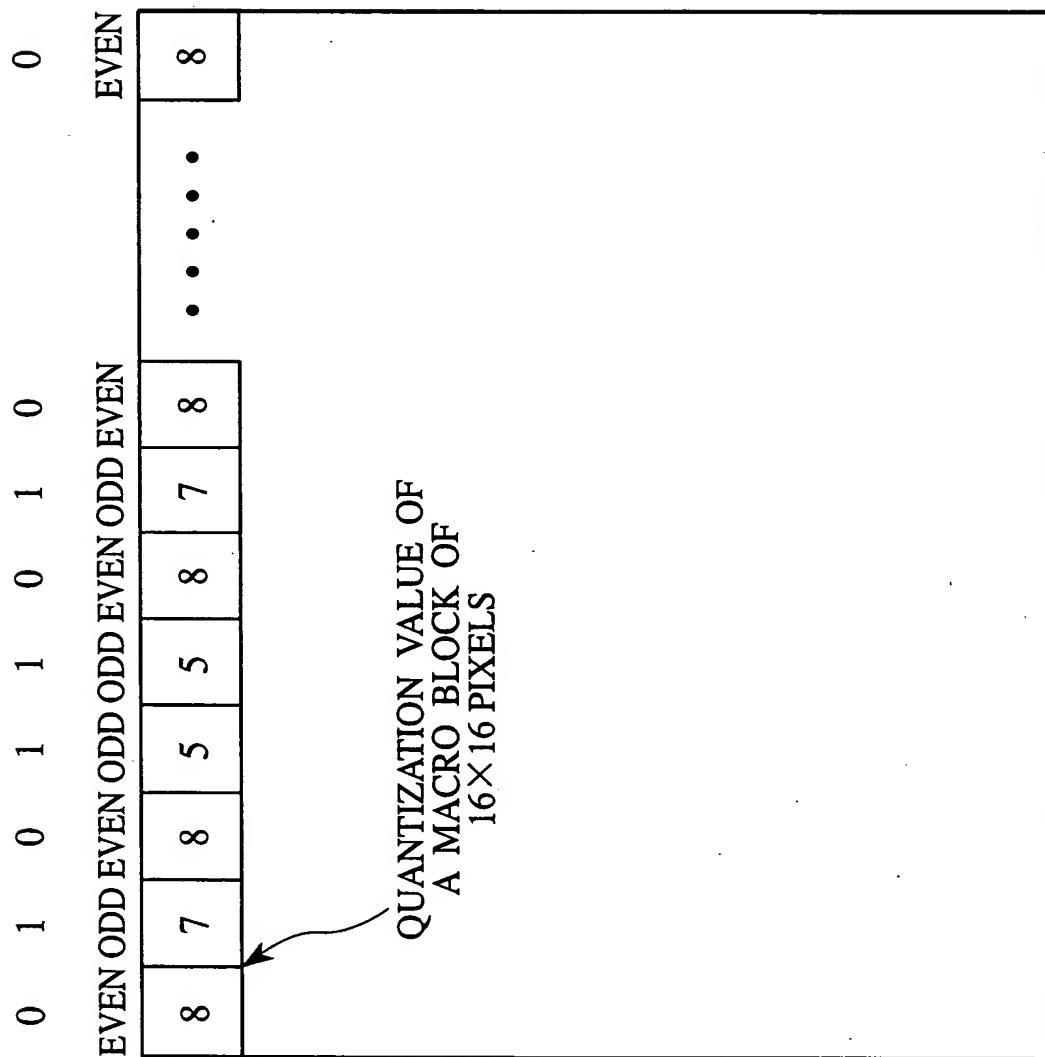
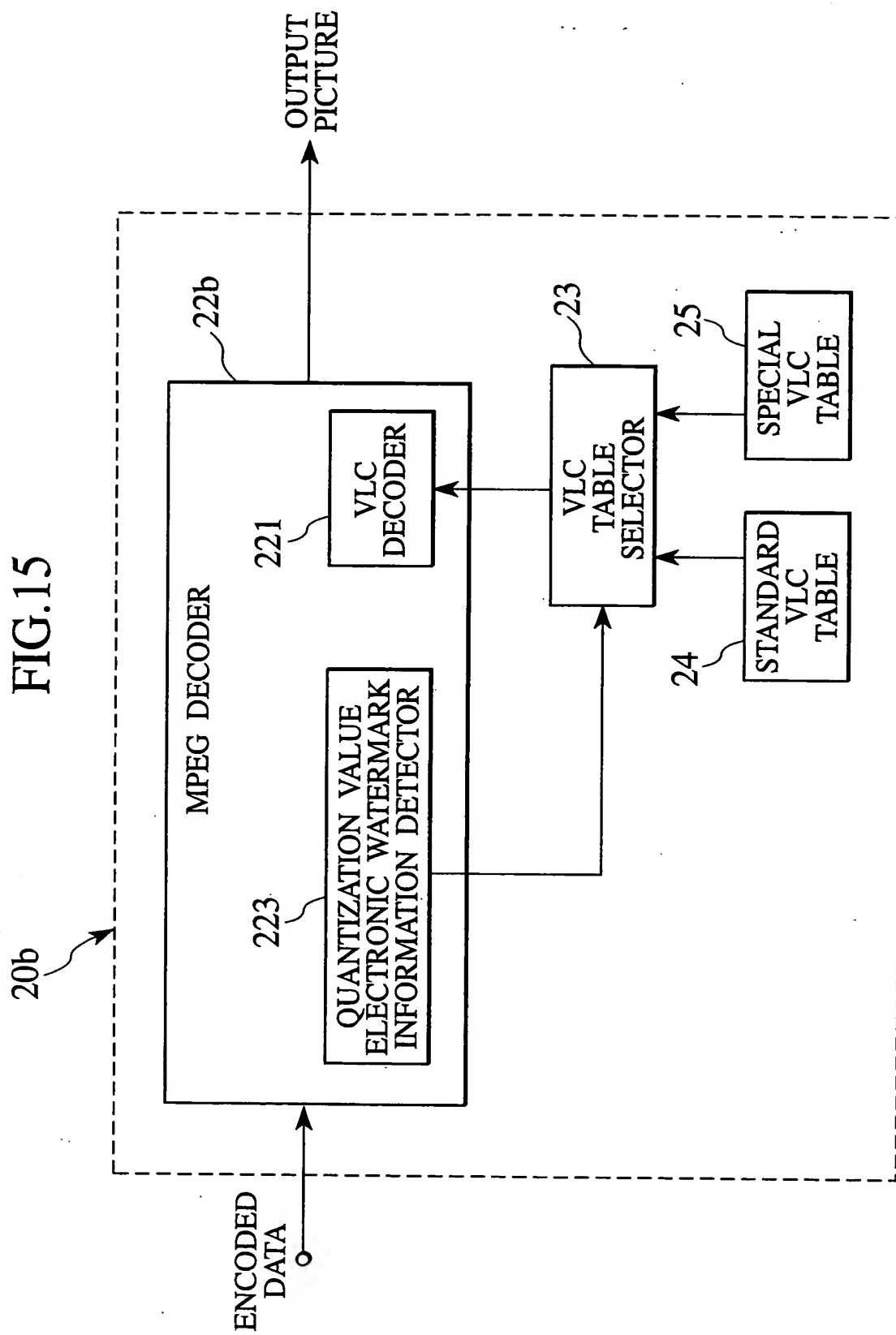


FIG. 15



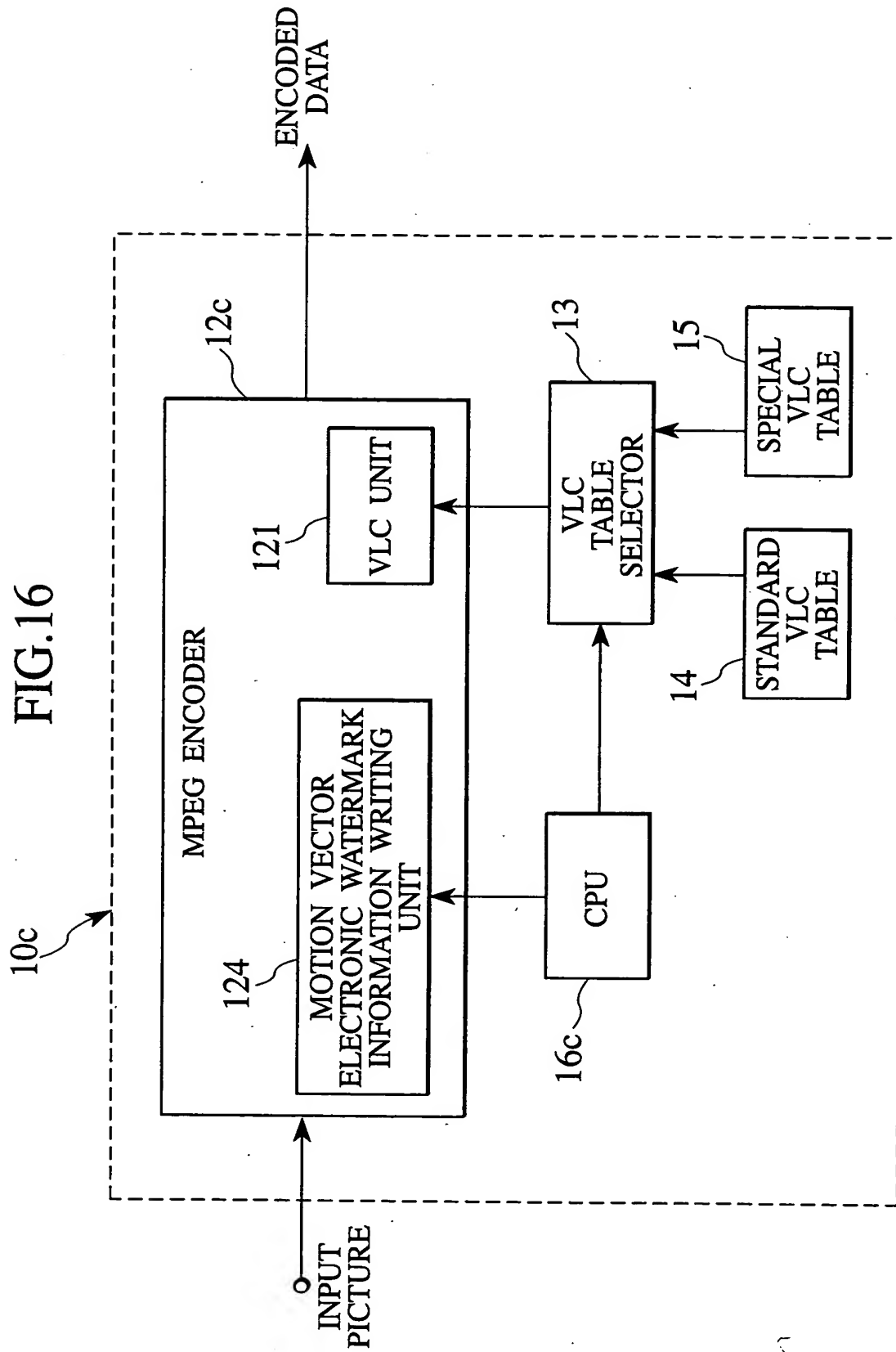


FIG.17

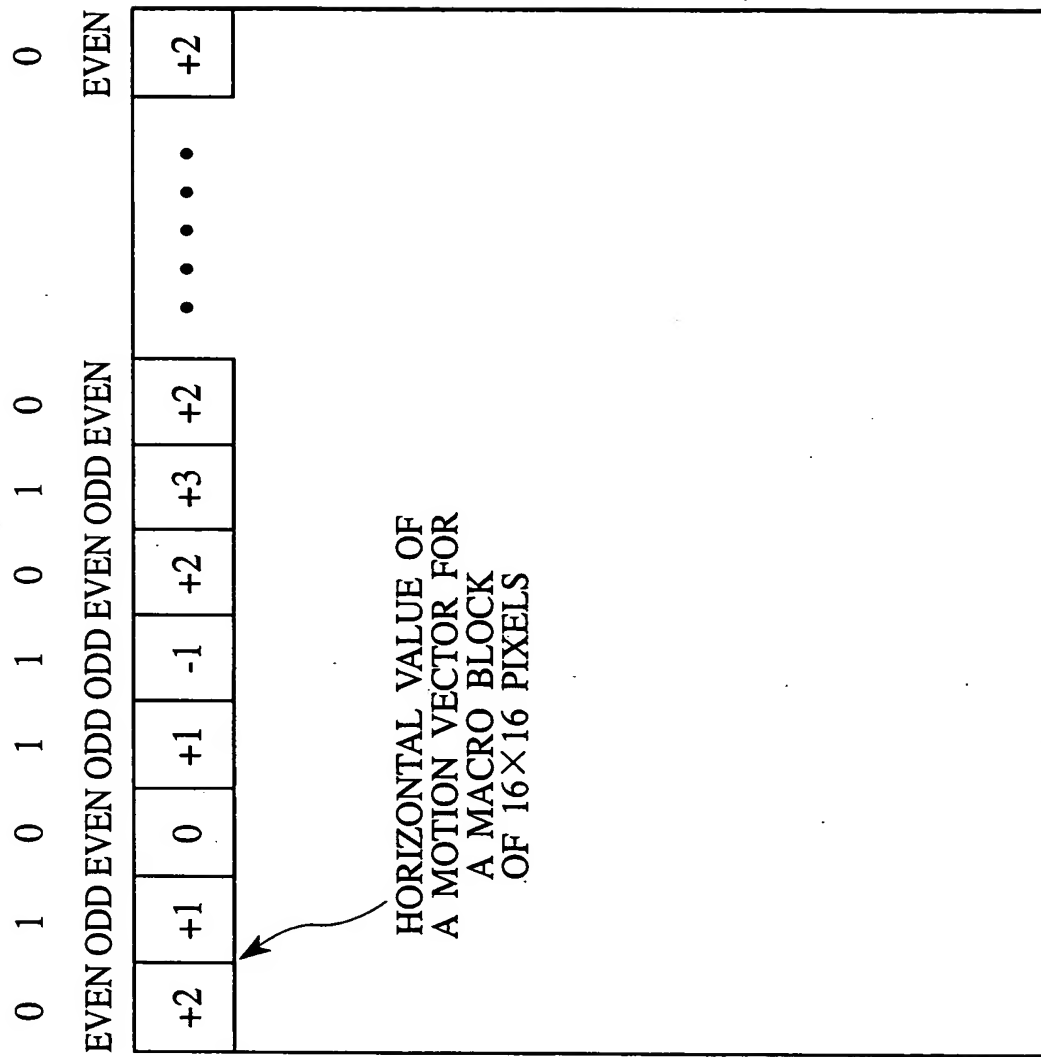


FIG. 18

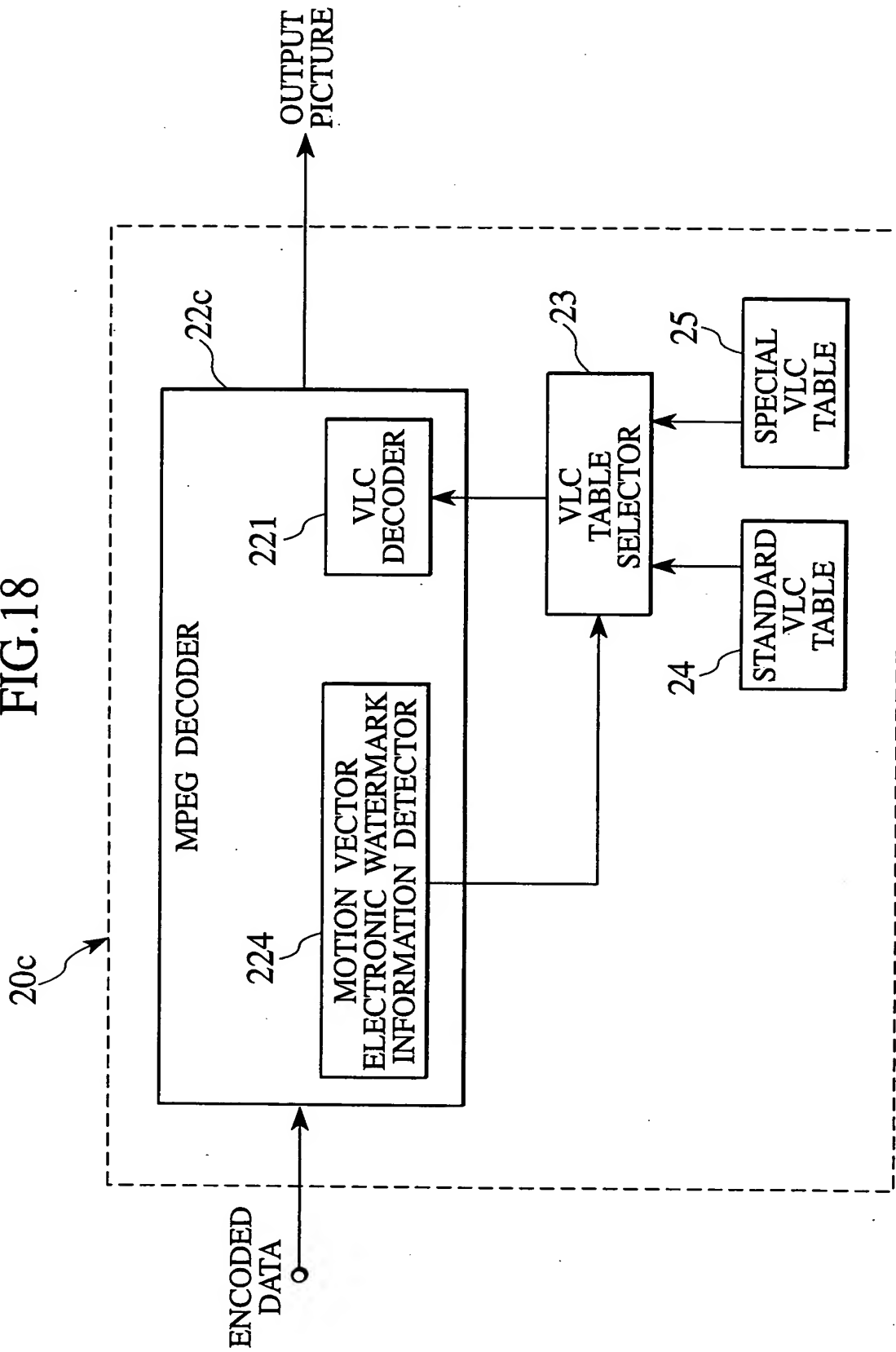


FIG.19

VLC CODE	RUN LENGTH	LEVEL
10 (Note 2)	End of block	
1 s (Note 3)	0	1
11 s (Note 4)	0	1
011 s	1	1
0100 s	0	2
0101 s	2	1
0010 1 s	0	3
0011 1 s	3	1
0011 0 s	4	1
0001 10 s	1	2
0001 11 s	5	1
0001 01 s	6	1
0001 00 s	7	1
0000 110 s	0	4
0000 100 s	2	2
0000 111 s	8	1
0000 101 s	9	1
0000 01	Escape	
0010 0110 s	0	5
0010 0001 s	0	6
0010 0101 s	1	3
0010 0100 s	3	2
0010 0111 s	10	1
0010 0011 s	11	1
.
.
.
0000 0000 0001 1111 s	27	1
0000 0000 0001 1110 s	28	1
0000 0000 0001 1101 s	29	1
0000 0000 0001 1100 s	30	1
0000 0000 0001 1011 s	31	1
(NOTE) AS FOR BIT "s", "0" REPRESENTS POSITIVE AND "1" REPRESENTS NEGATIVE.		

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FIG.20

VLC CODE	RUN LENGTH	LEVEL	REPLACED ADDRESS
10 (Note 2)	End of block		
1 s (Note 3)	0	1	A1
11 s (Note 4)	0	1	A2
011 s	1	1	B1
0100 s	0	2	A3
0101 s	2	1	C1
0010 1 s	0	3	A4
0011 1 s	3	1	
0011 0 s	4	1	
0001 10 s	1	2	B2
0001 11 s	5	1	
0001 01 s	6	1	
0001 00 s	7	1	
0000 110 s	0	4	A5
0000 100 s	2	2	C2
0000 111 s	8	1	
0000 101 s	9	1	
0000 01	Escape		
0010 0110 s	0	5	A6
0010 0001 s	0	6	A7
0010 0101 s	1	3	B3
.	
.	
0000 0010 00 s	16	1	
0000 0001 1101 s	0	8	A8
0000 0001 1000 s	0	9	A9
0000 0001 0011 s	0	10	A10
0000 0001 0000 s	0	11	A11
0000 0001 1011 s	1	5	B4
.	
.	
0000 0001 0110 s	21	1	
0000 0000 1101 0 s	0	12	A12
0000 0000 1100 1 s	0	13	A13
0000 0000 1100 0 s	0	14	A14
0000 0000 1011 1 s	0	15	A15
0000 0000 1011 0 s	1	6	B5
.	

FIG.21

VLC CODE	RUN LENGTH	LEVEL	REPLACED ADDRESS
• • • • •	•	• •	
• • • • •	•	• •	
0000 0000 1110 0 s	25	1	
0000 0000 1101 1 s	26	1	
0000 0000 0111 11 s	0	16	
0000 0000 0111 10 s	0	17	A16
0000 0000 0111 01 s	0	18	A17
0000 0000 0111 00 s	0	19	A18
0000 0000 0110 11 s	0	20	A19
0000 0000 0110 10 s	0	21	A20
0000 0000 0110 01 s	0	22	A21
0000 0000 0110 00 s	0	23	A22
0000 0000 0101 11 s	0	24	A23
0000 0000 0101 10 s	0	25	A24
0000 0000 0101 01 s	0	26	A25
0000 0000 0101 00 s	0	27	A26
0000 0000 0100 11 s	0	28	A27
0000 0000 0100 10 s	0	29	A28
0000 0000 0100 01 s	0	30	A29
0000 0000 0100 00 s	0	31	A30
0000 0000 0011 000 s	0	32	A31
0000 0000 0010 111 s	0	33	A32
0000 0000 0010 110 s	0	34	A33
0000 0000 0010 101 s	0	35	A34
0000 0000 0010 100 s	0	38	A35
0000 0000 0010 011 s	0	39	A36
0000 0000 0010 010 s	0	40	A37
0000 0000 0010 001 s	0	41	A38
• • • • •	•	• •	
• • • • •	•	• •	
0000 0000 0001 1100 s	30	1	
0000 0000 0001 1011 s	31	1	

FIG.22

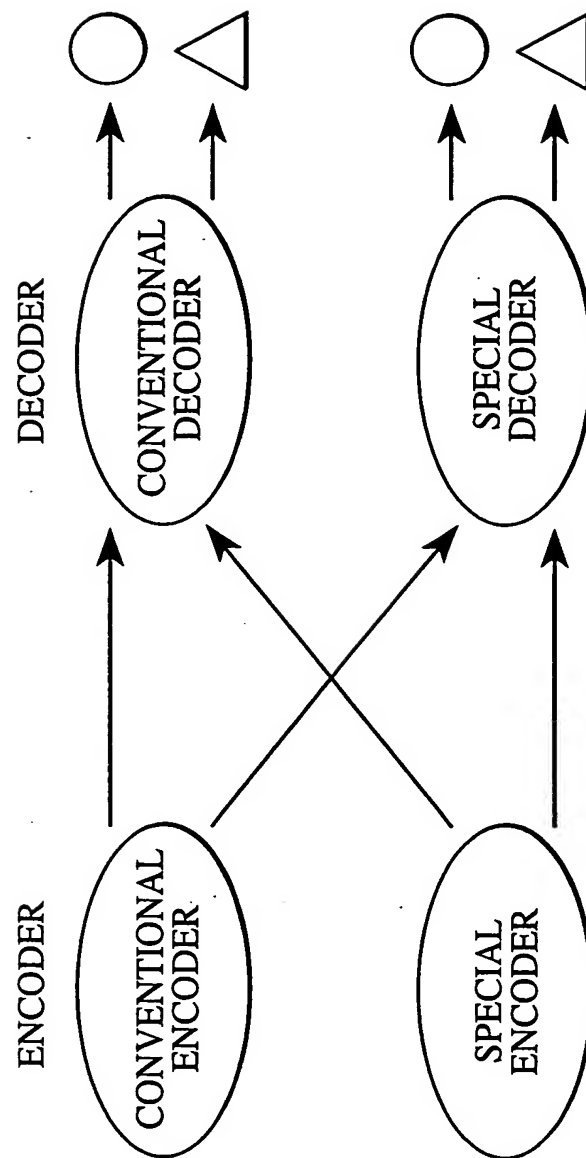


FIG.23

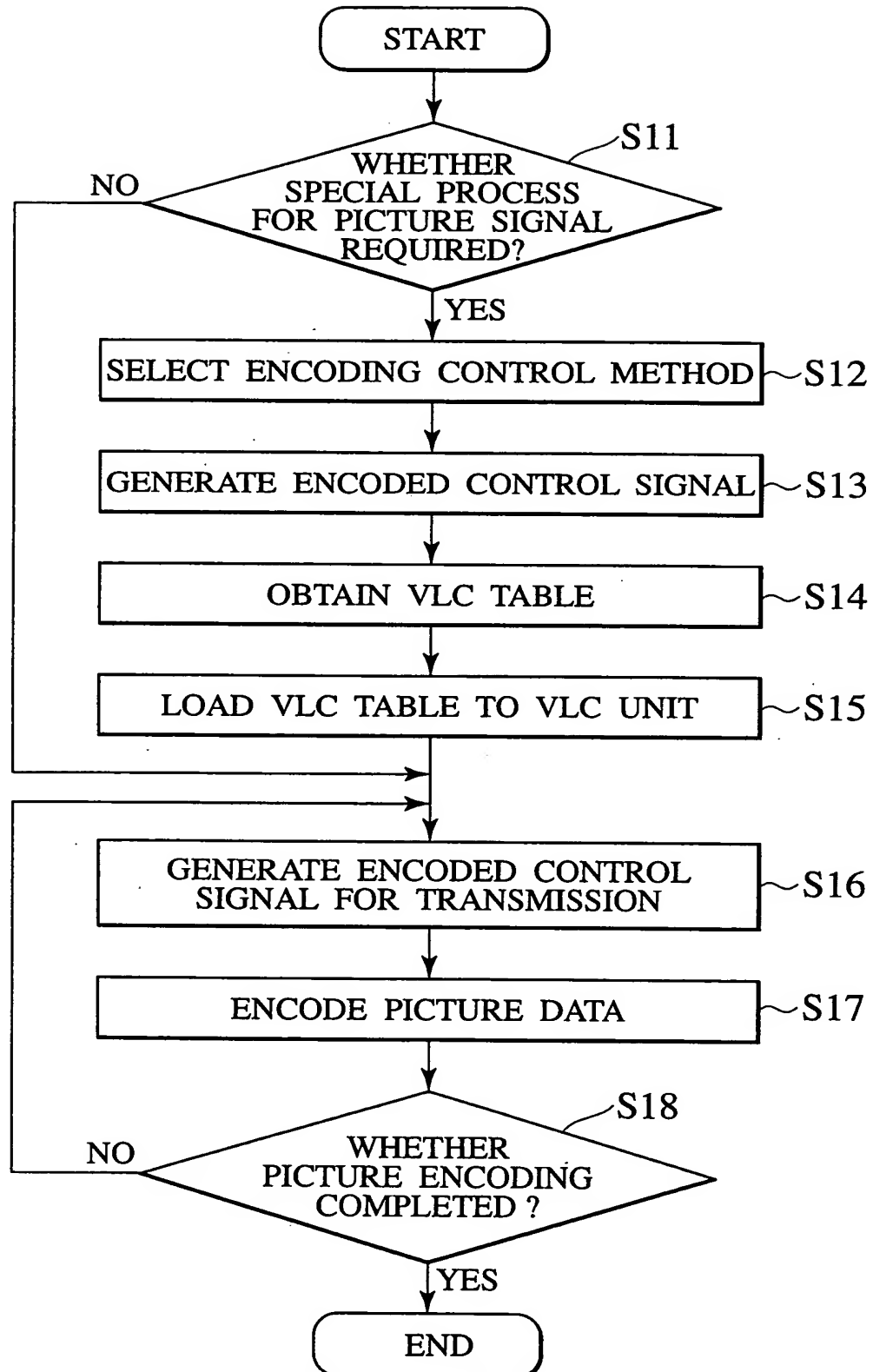


FIG.24

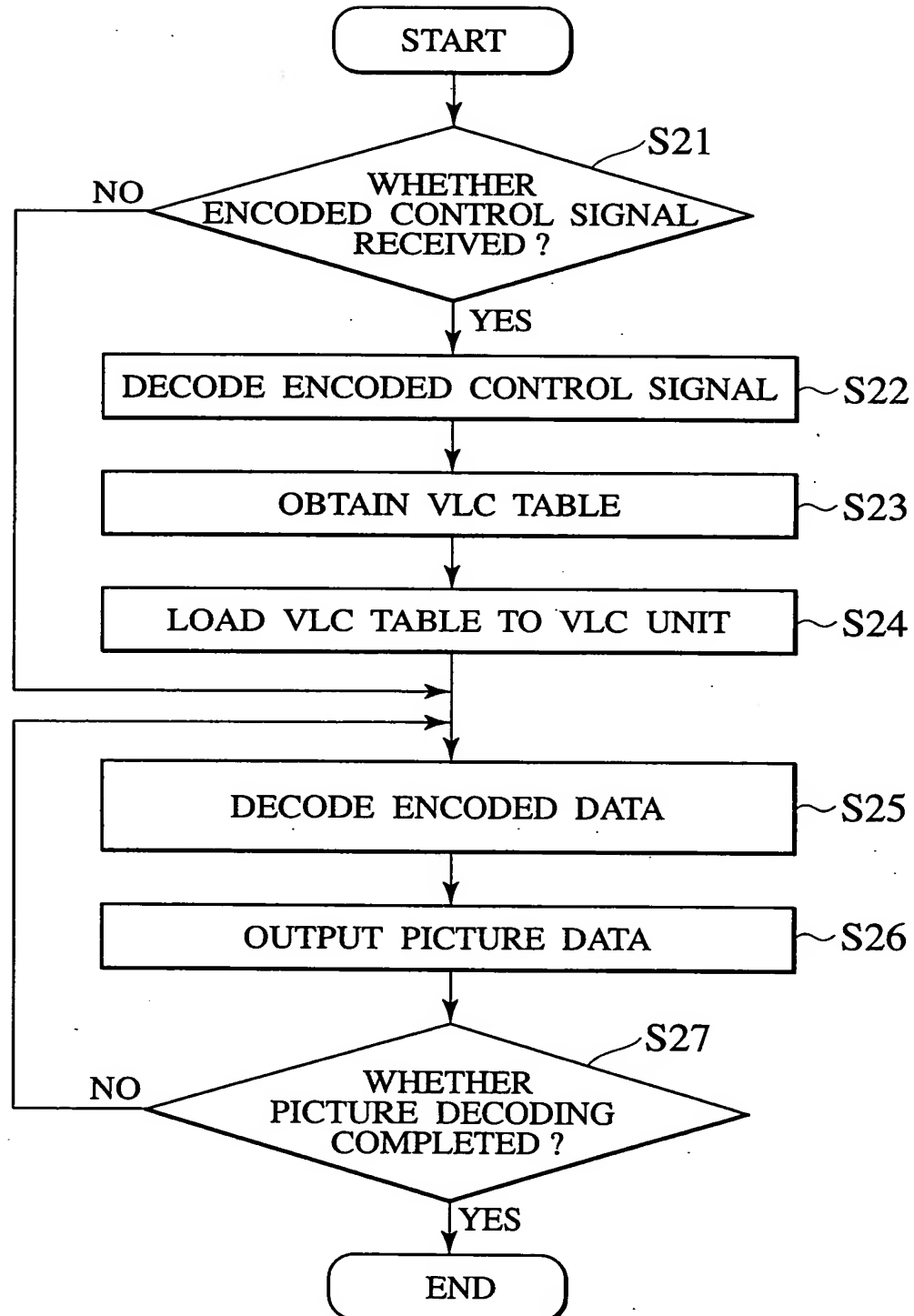


FIG.25

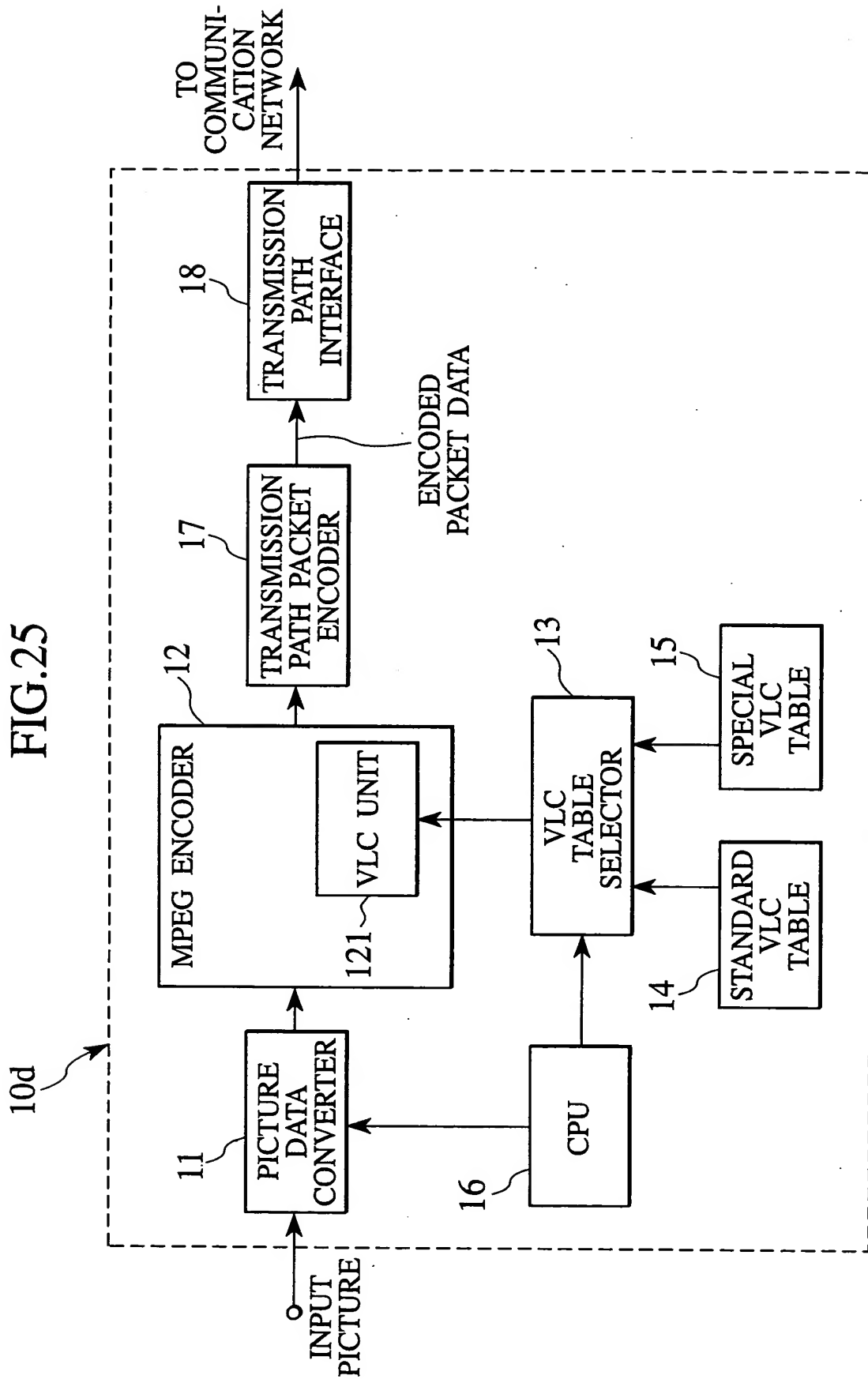


FIG. 26

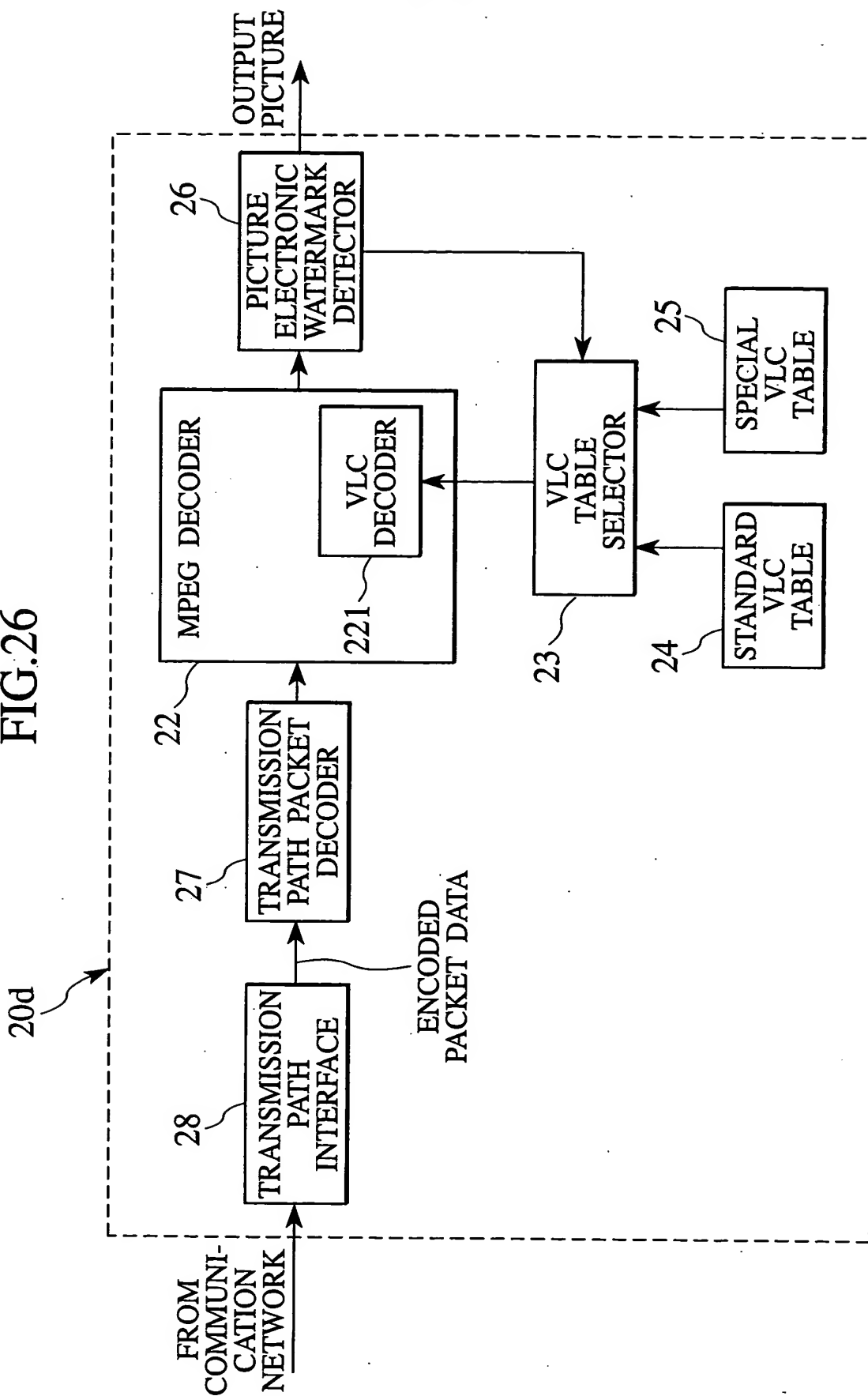


FIG.27

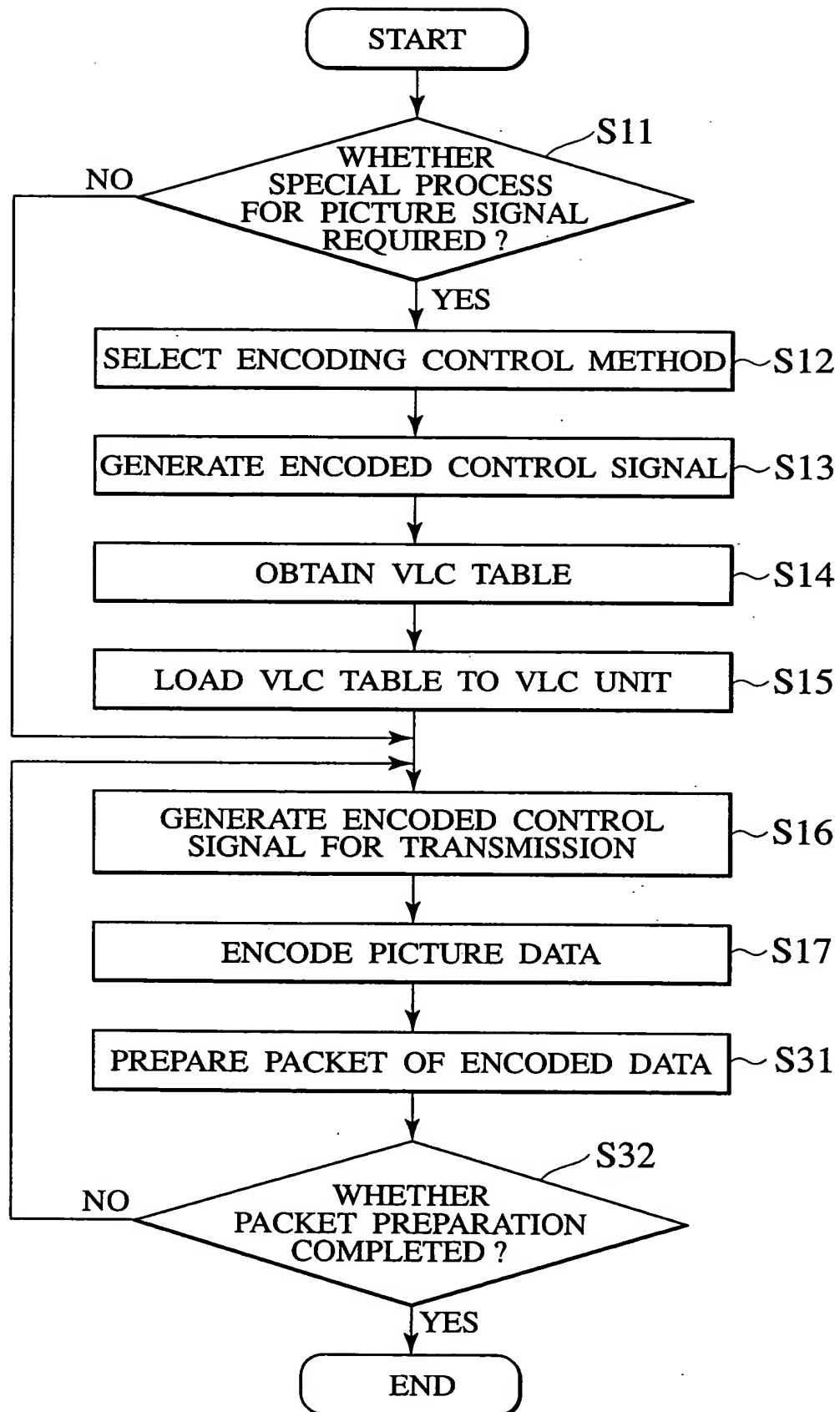


FIG.28

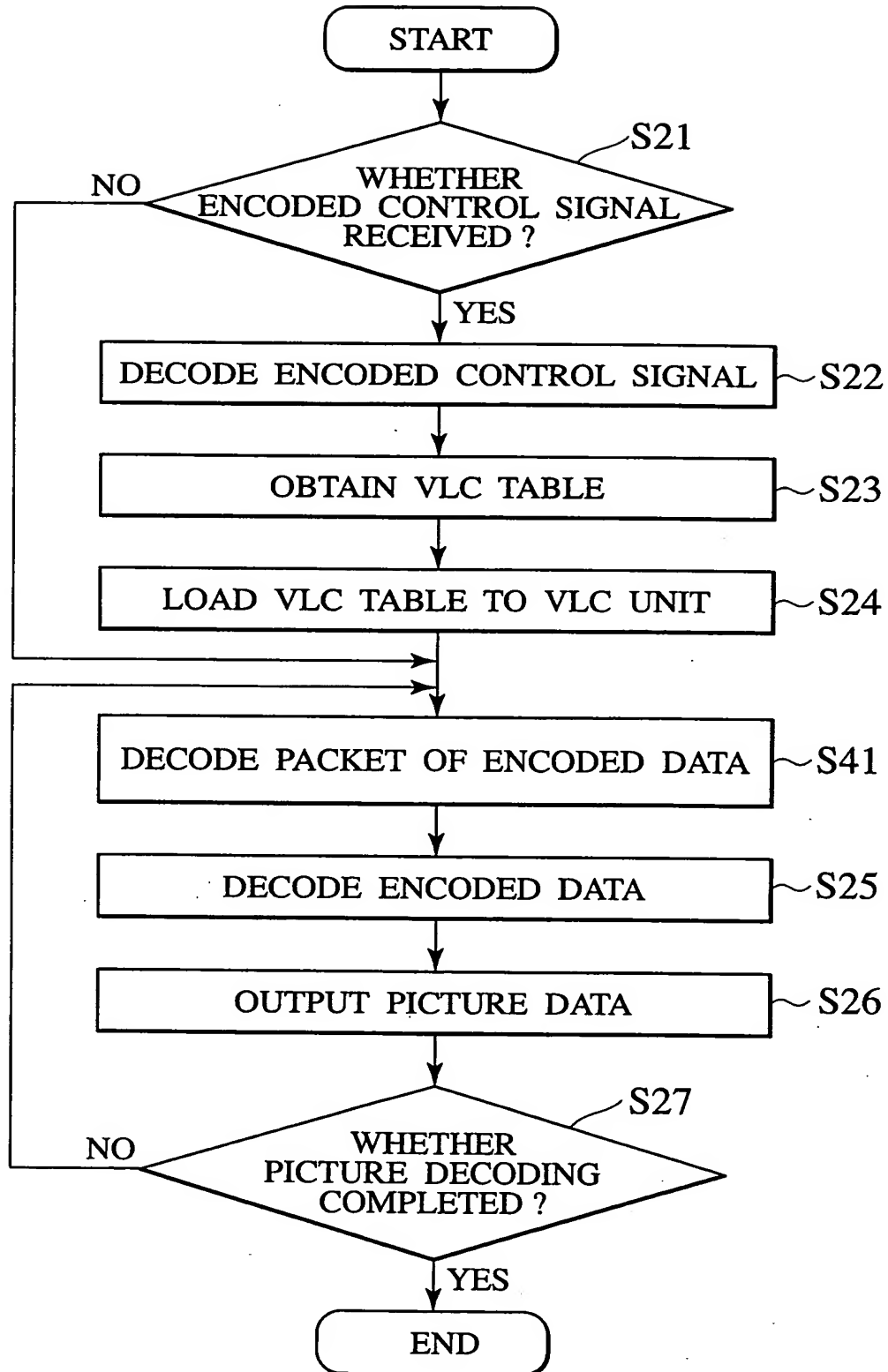


FIG.29

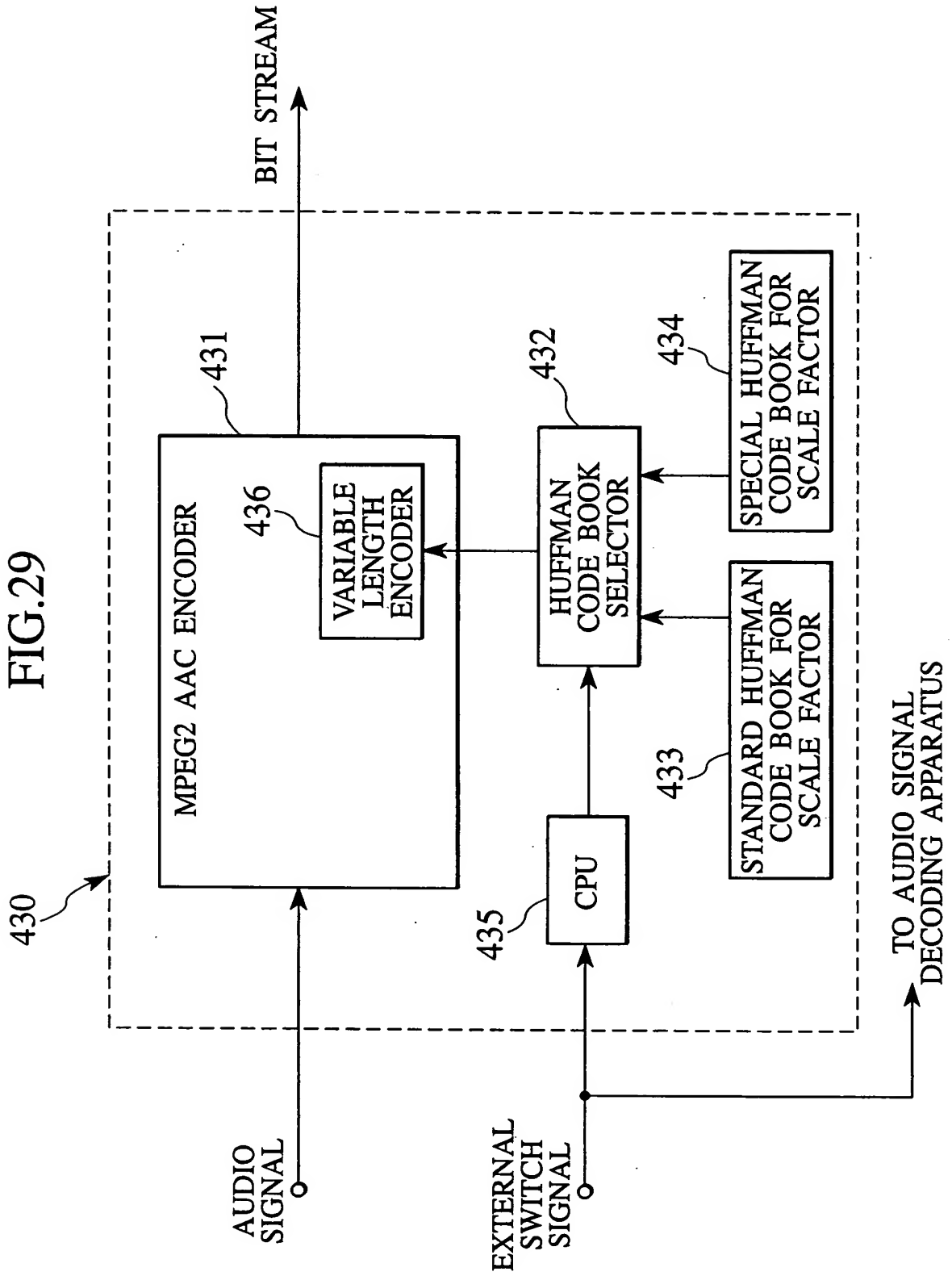


FIG.30

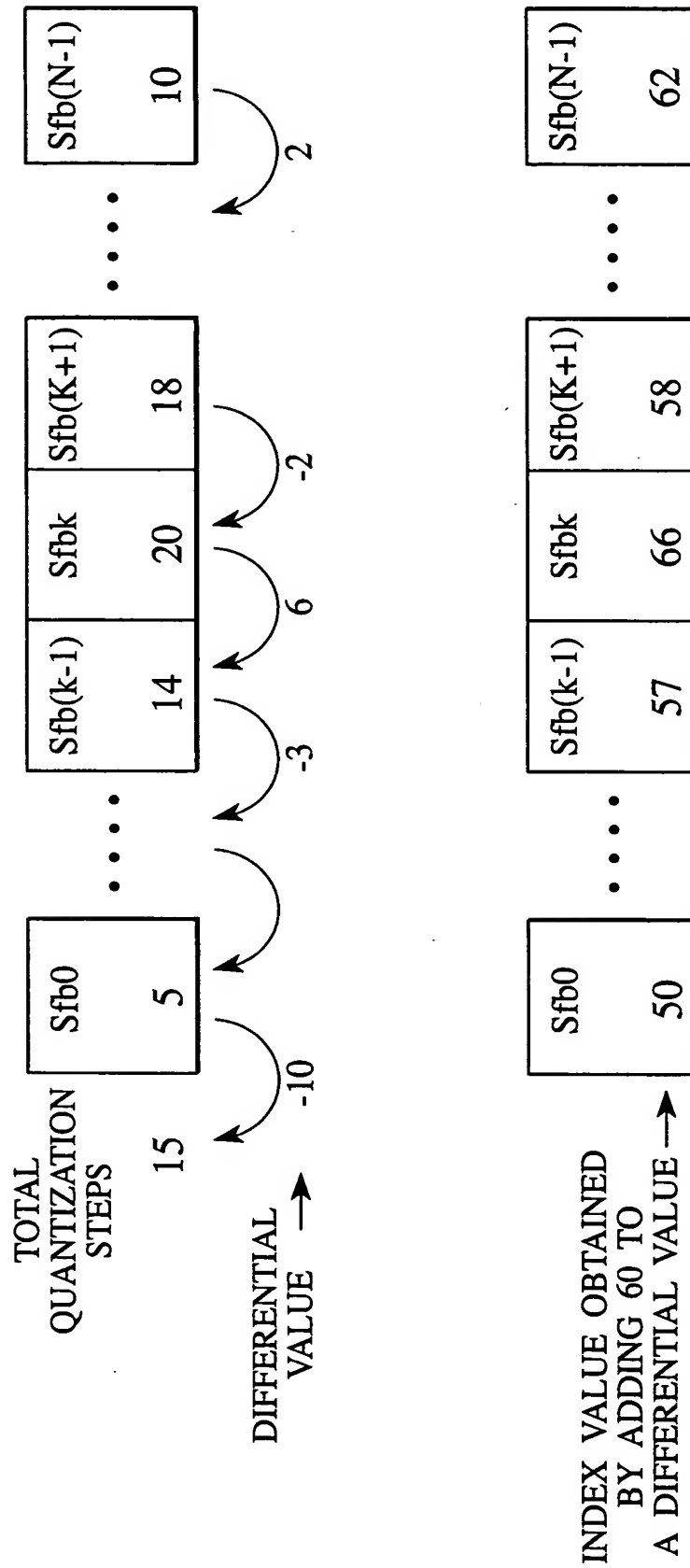


FIG.31

index	length	codeword (HEXADECIMAL EXPRESSION)	index	length	codeword (HEXADECIMAL EXPRESSION)
0	18	3ffe8	61	4	a
:			62	4	c
10	19	7fff0	63	5	1b
:			64	6	39
20	19	7fffa	65	6	3b
:			:		
30	15	7ff6	70	9	1f6
:			:		
40	12	ff9	80	12	ff8
:			:		
50	9	1f7	90	18	3ffe2
:			:		
55	6	3a	100	19	7ffd4
56	6	38	:		
57	5	1a	110	19	7ffe6
58	4	b	:		
59	3	4	120	19	7fff3
60	1	0			

FIG.32

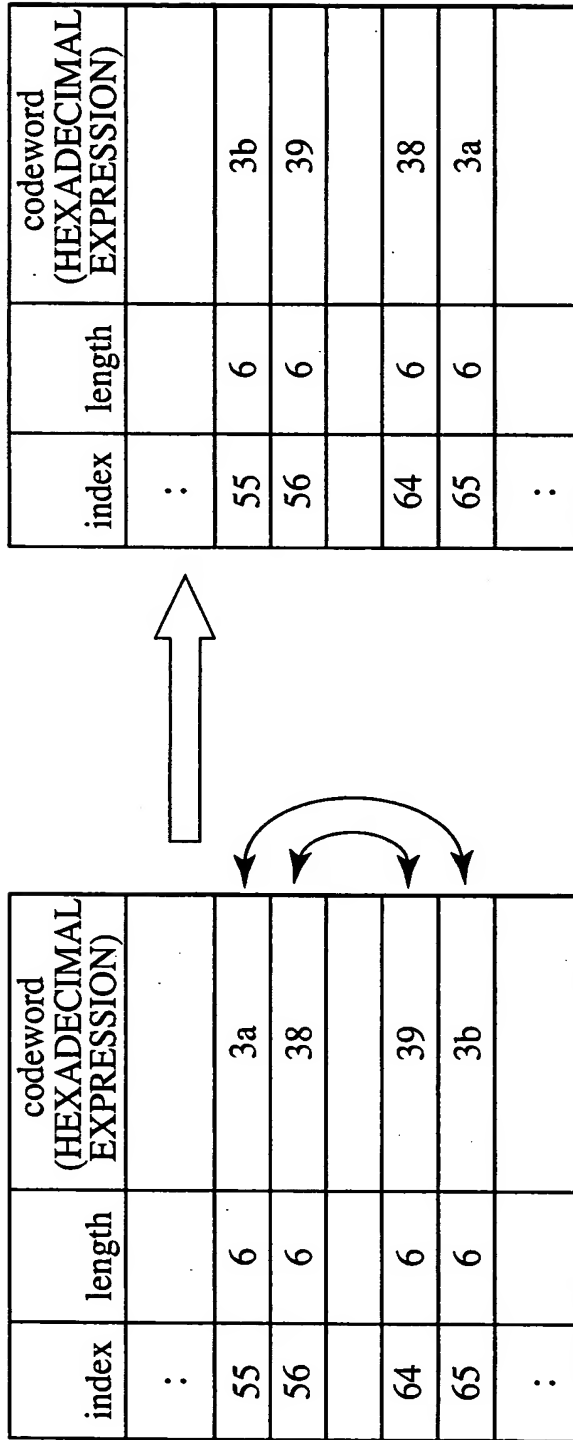


FIG.33

	sfb0	sfb1	sfb2	sfb3	sfb4
(1) SCALE FACTOR	10	15	19	14	10
(2) DIFFERENCE FROM PRECEDING SFB	-20	5	4	-5	-4
(3) OFFSET ADDITION	40	65	64	55	56
(4) CODEWORD ENCODING	ff9	3a	38	3b	39
(5) CODEWORD DECODING	40	55	56	65	64
(6) OFFSET SUBTRACTION	-20	-5	-4	5	4
(7) SCALE FACTOR	10	5	1	6	10

FIG. 34

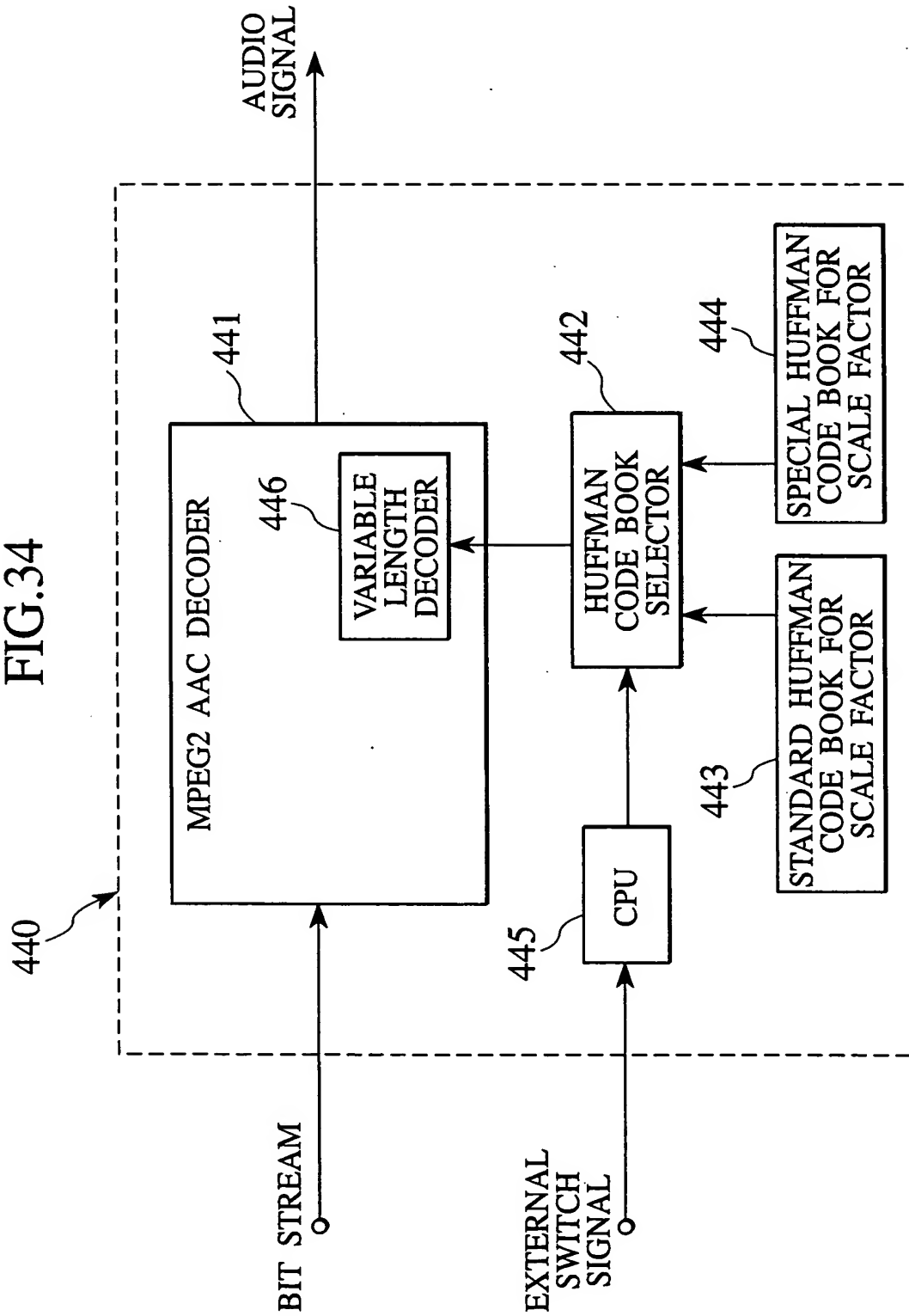


FIG. 35

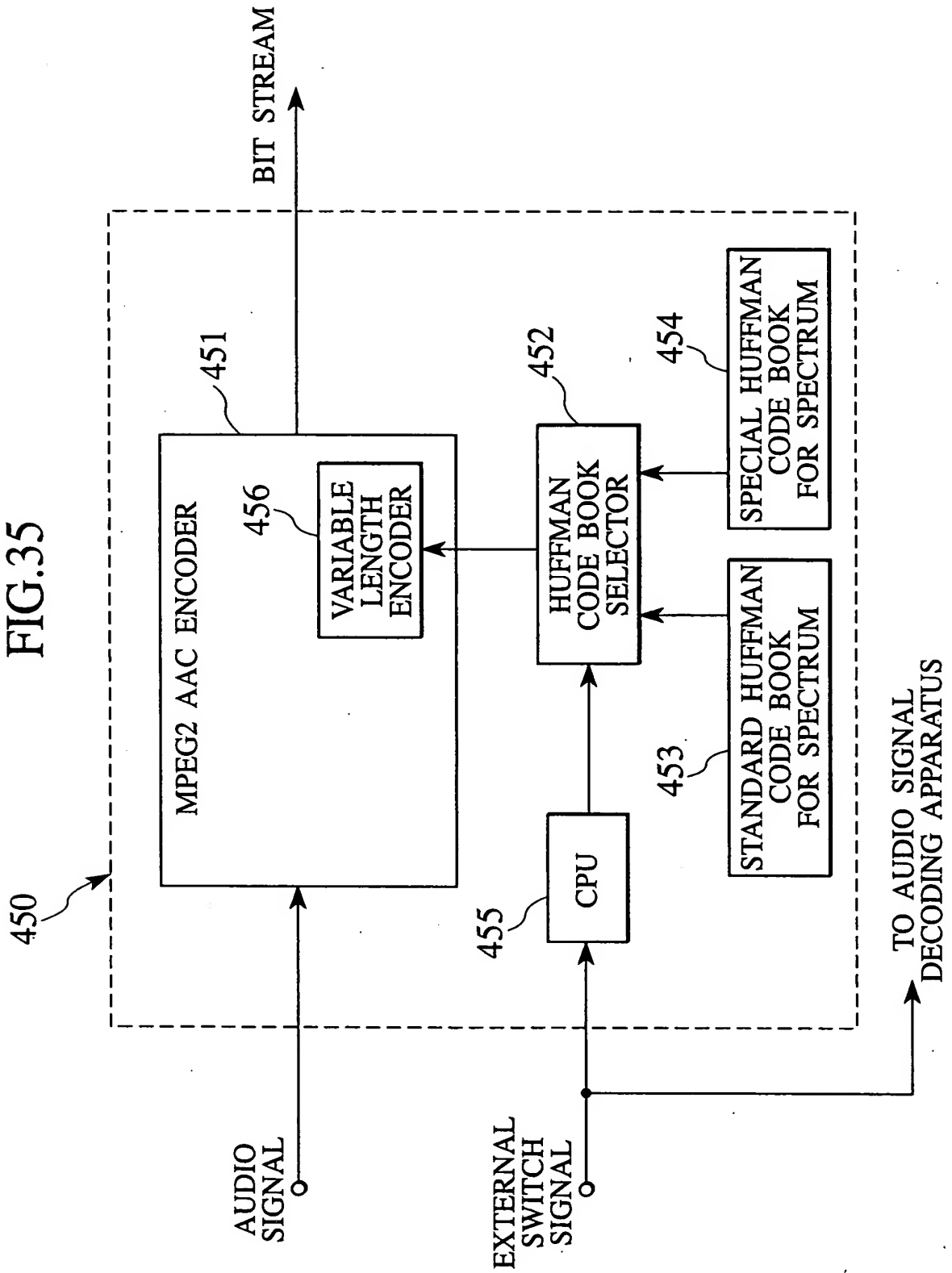


FIG.36

index	length	codeword (HEXADECIMAL EXPRESSION)	index	length	codeword (HEXADECIMAL EXPRESSION)
0	9	1f3	41	5	7
:			42	6	1d
10	6	2d	43	5	b
:			44	6	30
20	8	f8	45	8	ef
:			:		
30	6	2c	50	6	29
:			:		
35	8	f5	60	8	f7
36	6	24	:		
37	5	8	70	6	25
38	6	1f	:		
39	5	9	80	9	1f6
40	3	0			

FIG.37

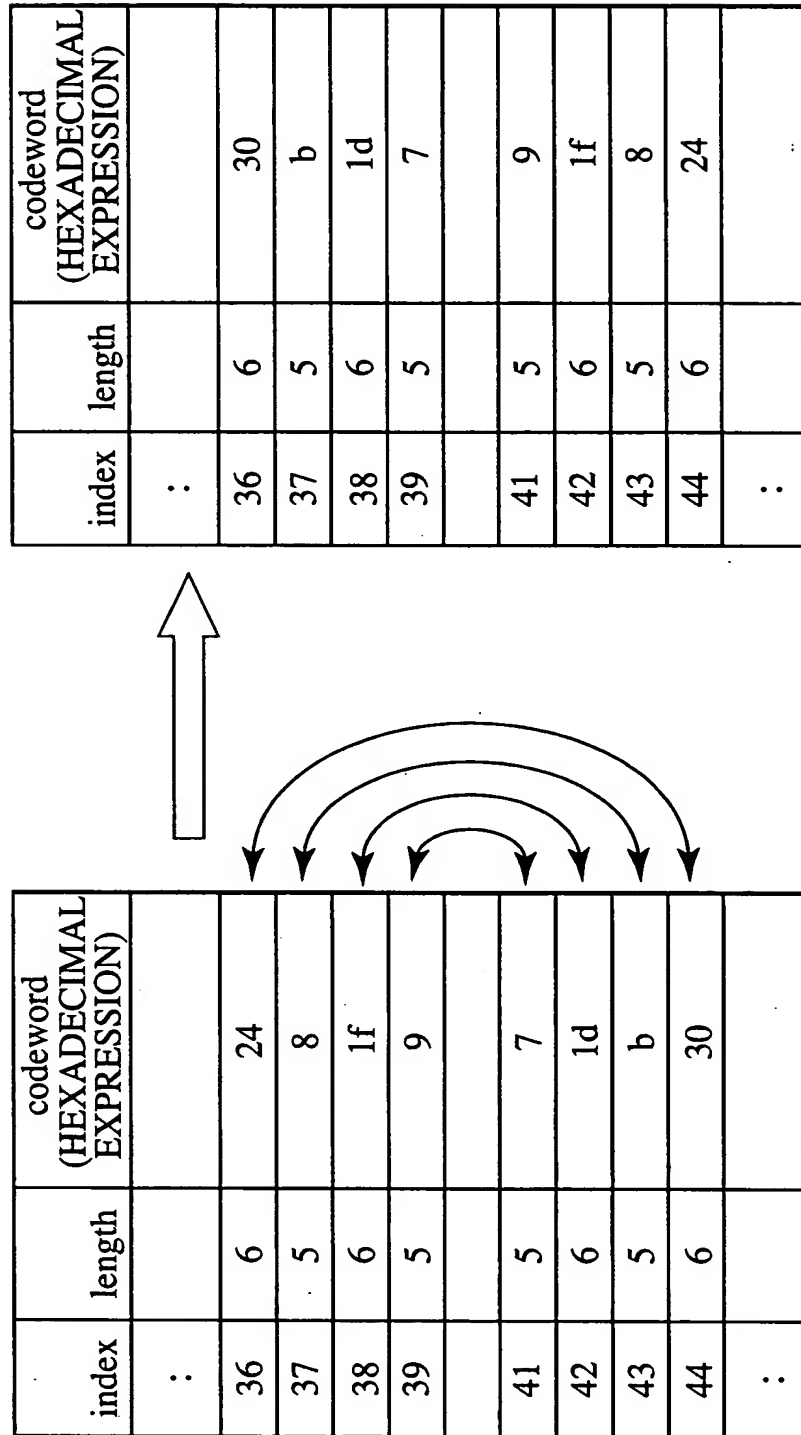
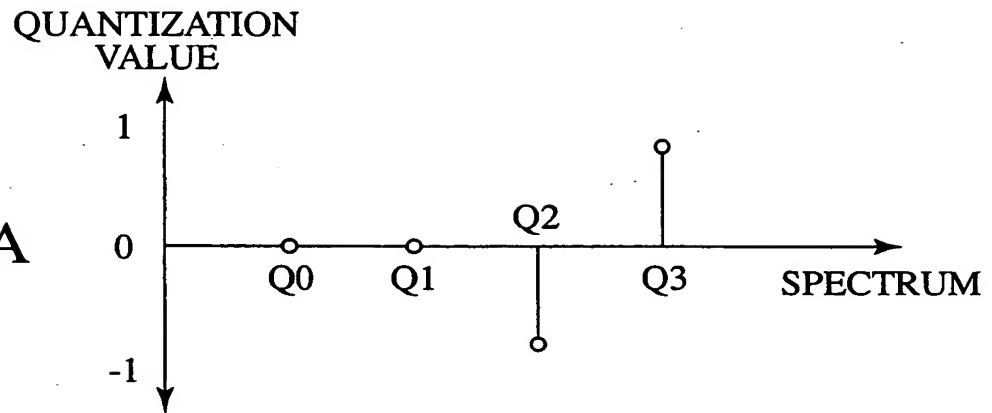


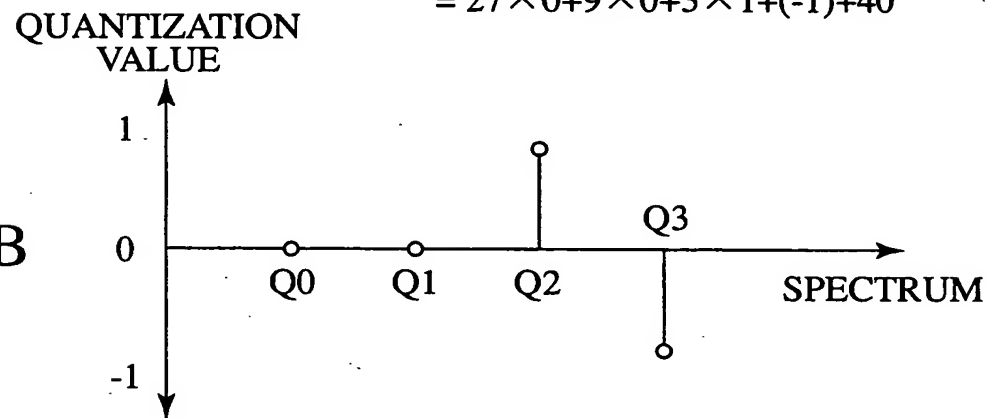
FIG.38A



$$\text{index} = 27 \times 0 + 9 \times 0 + 3 \times (-1) + 1 + 40 = 38 \rightarrow \text{codeword: 1d}$$



FIG.38B



$$\begin{aligned} \text{codeword: 1d} &\rightarrow \text{index} = 42 \\ &= 27 \times 0 + 9 \times 0 + 3 \times 1 + (-1) + 40 \end{aligned}$$

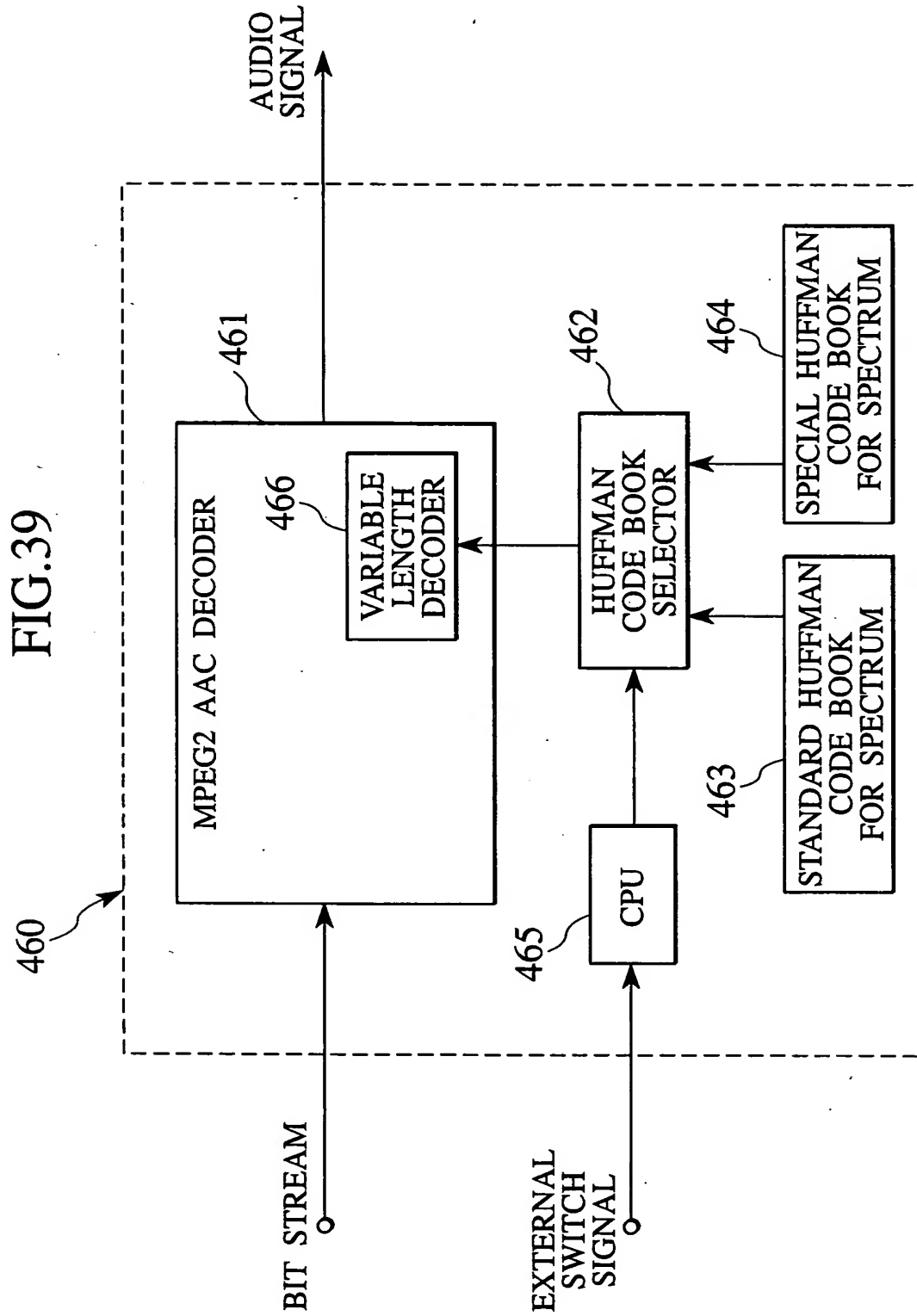


FIG. 40

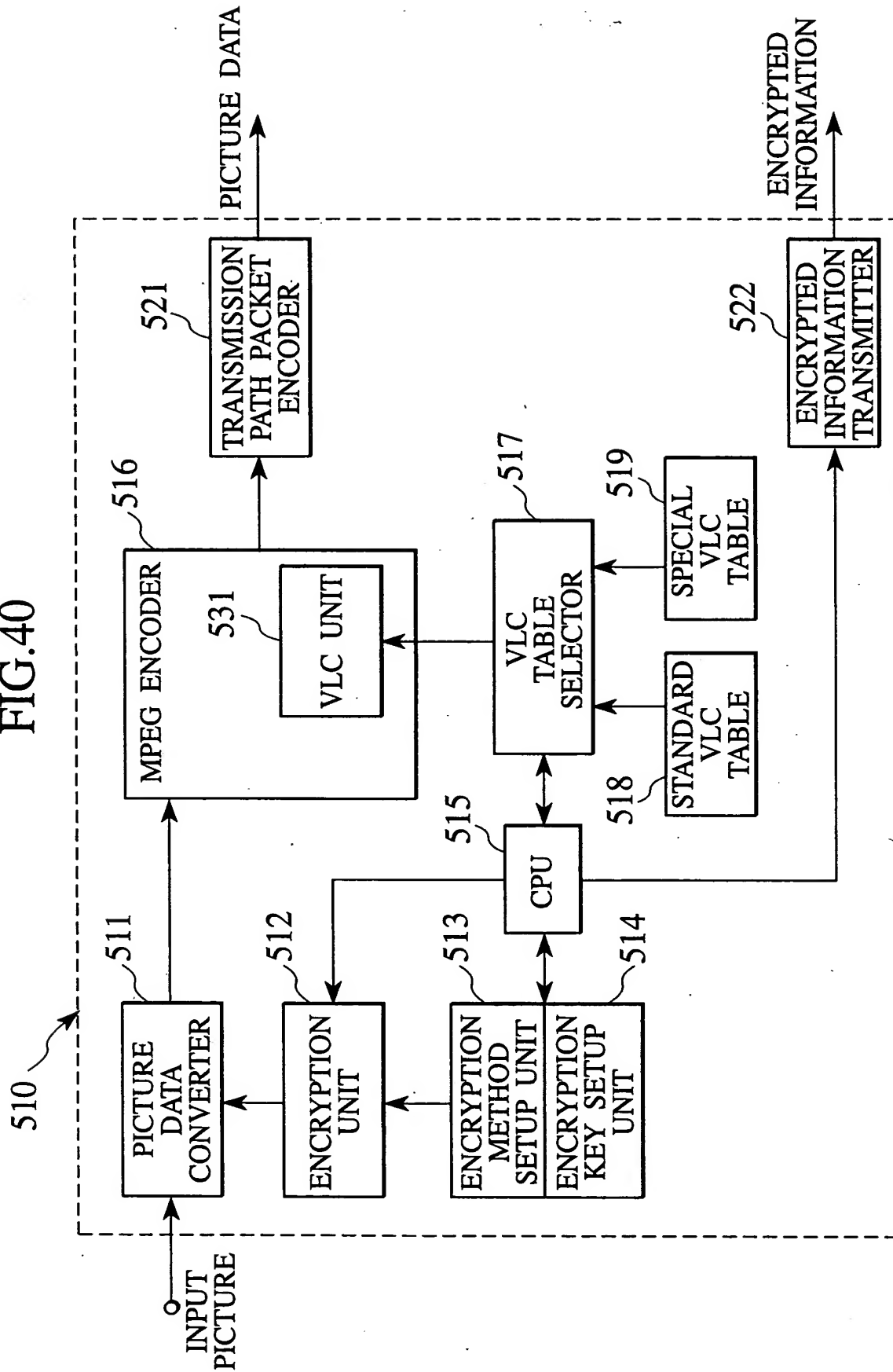


FIG. 41

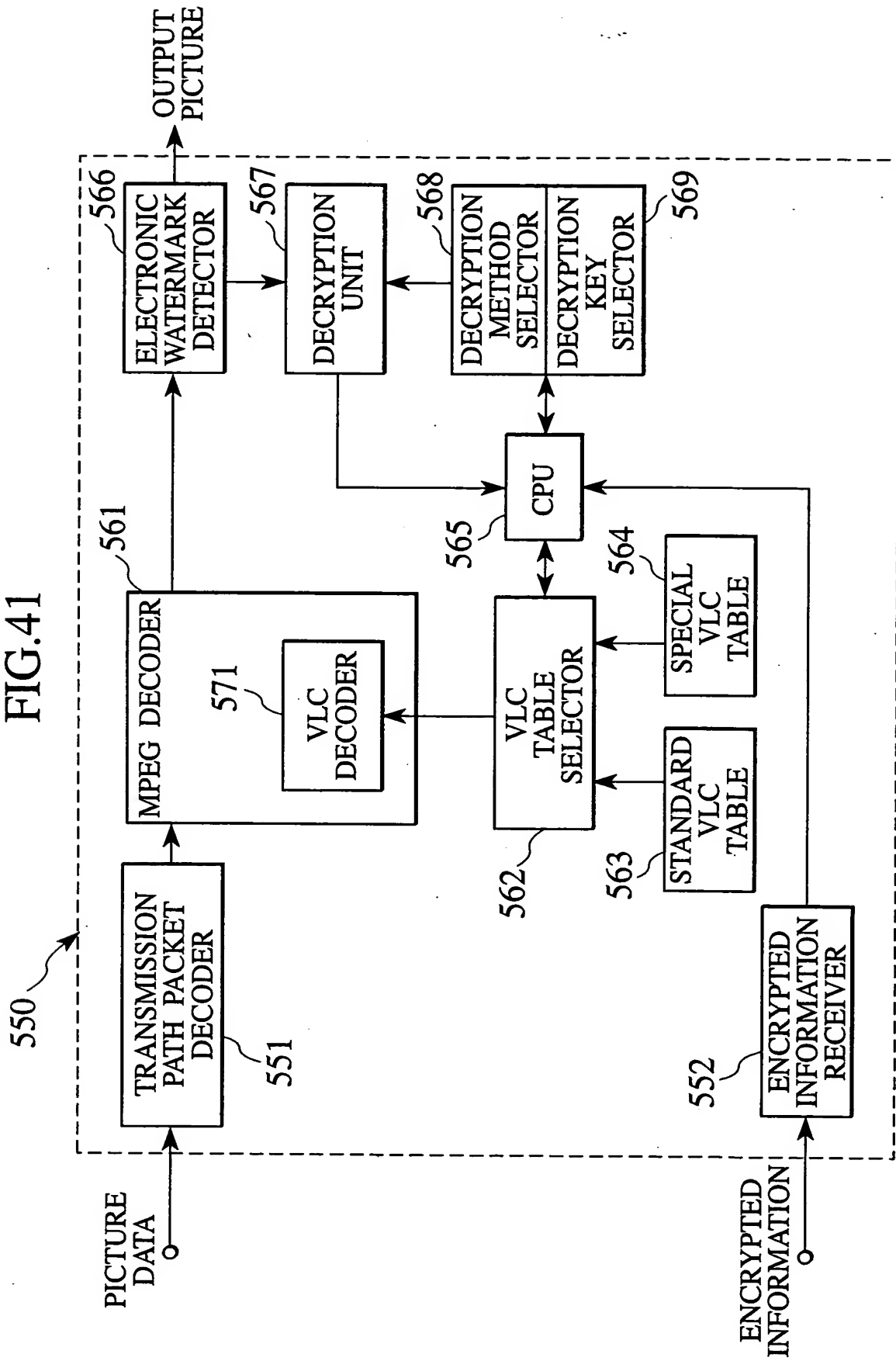


FIG. 42

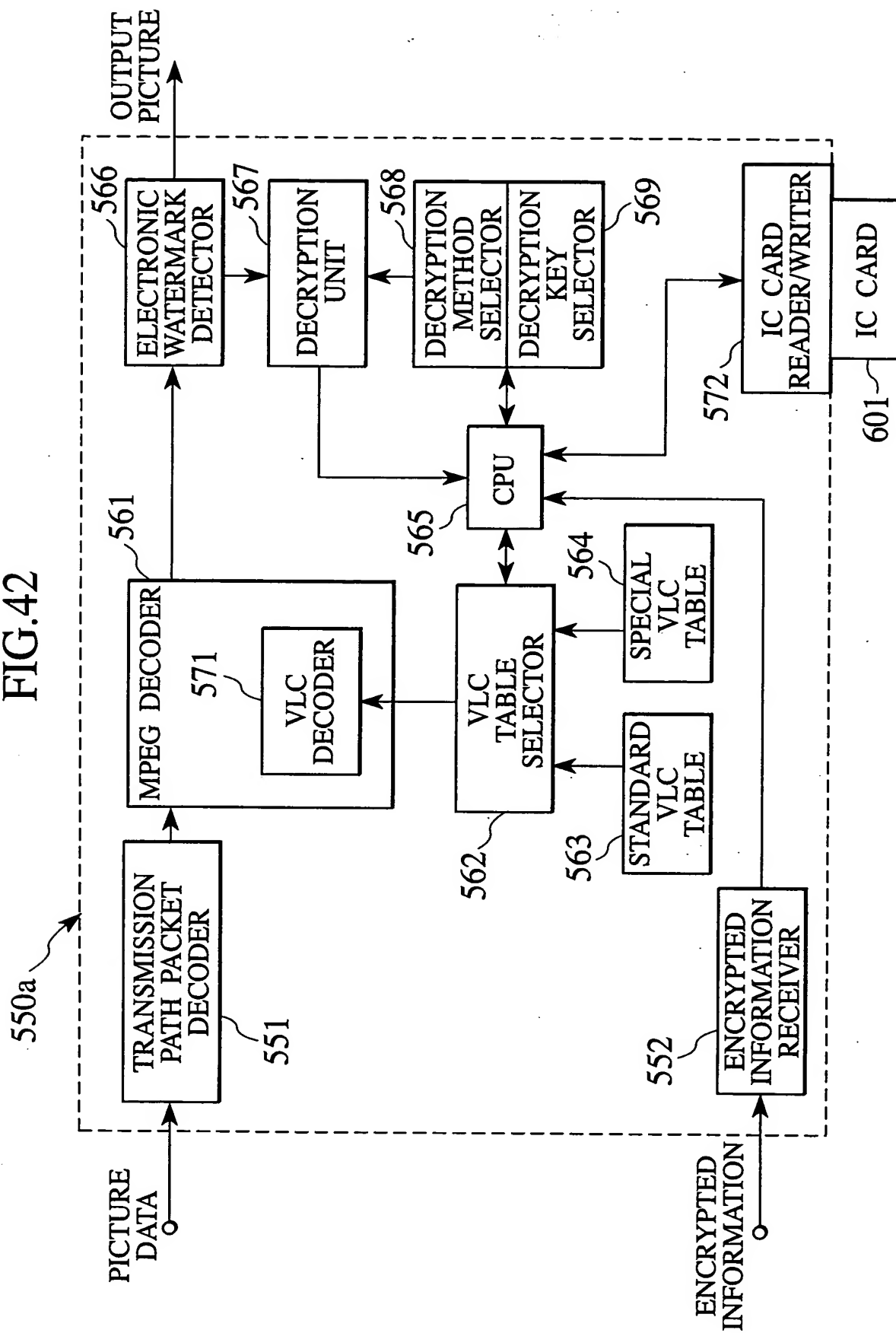


FIG. 43

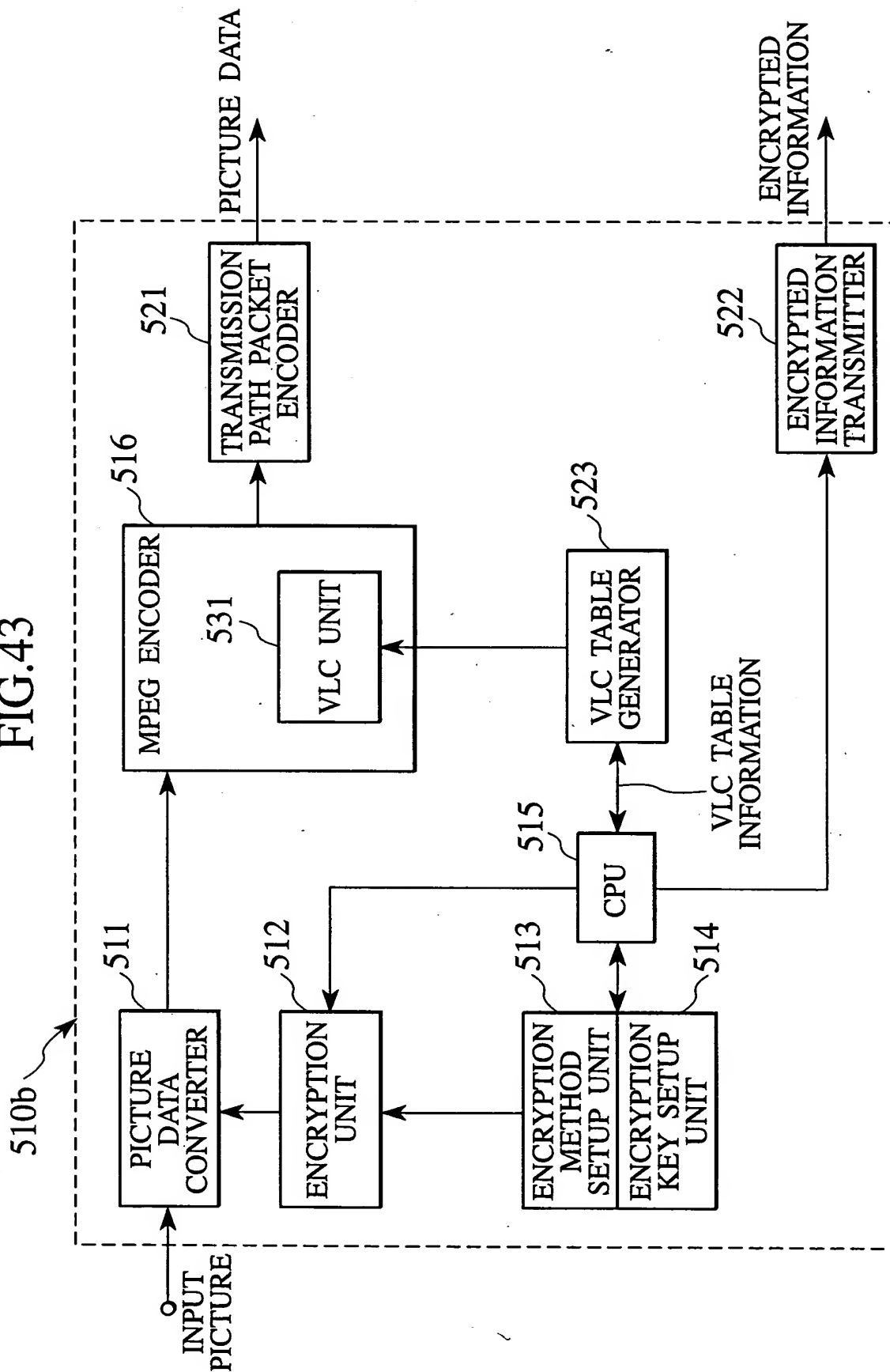


FIG. 44

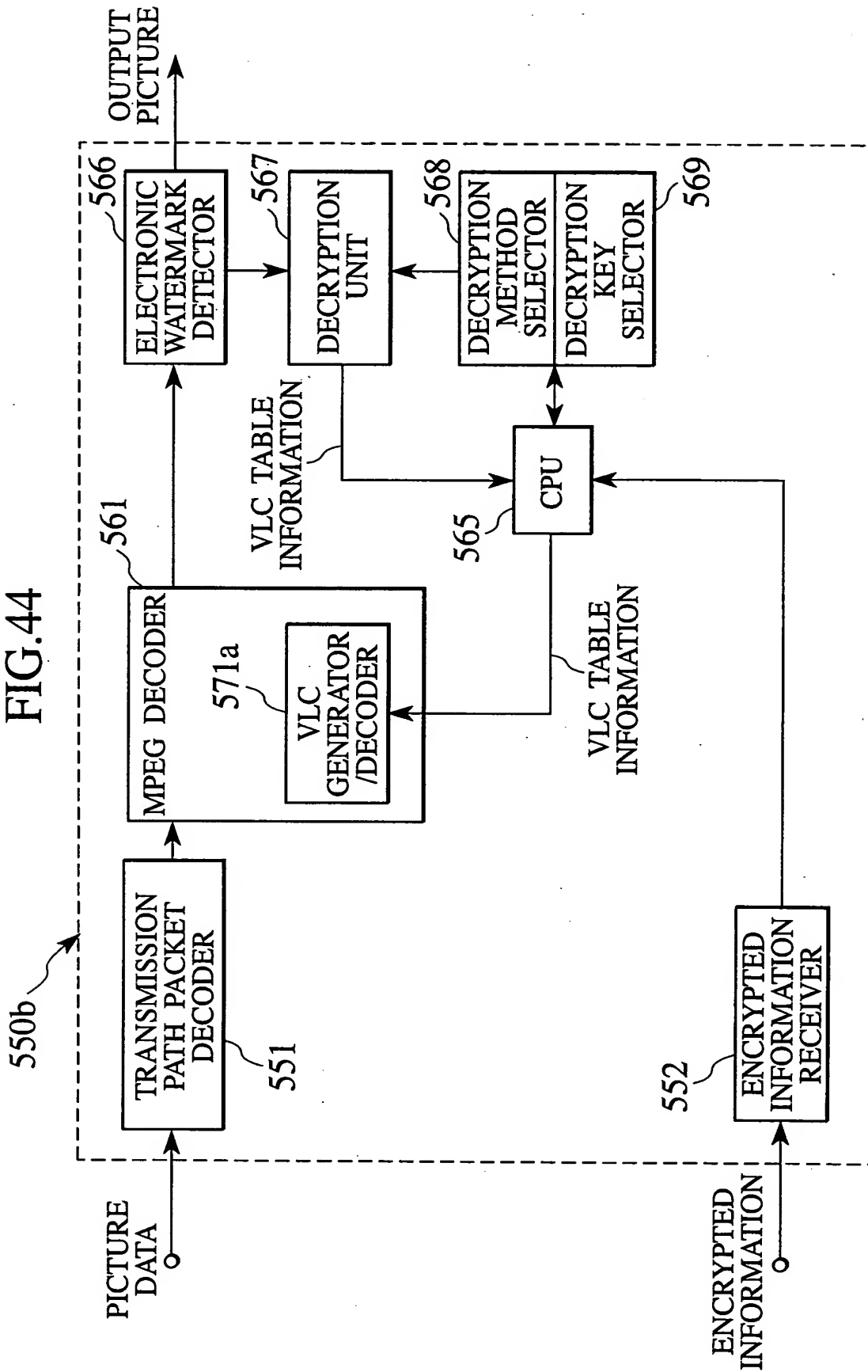


FIG. 45

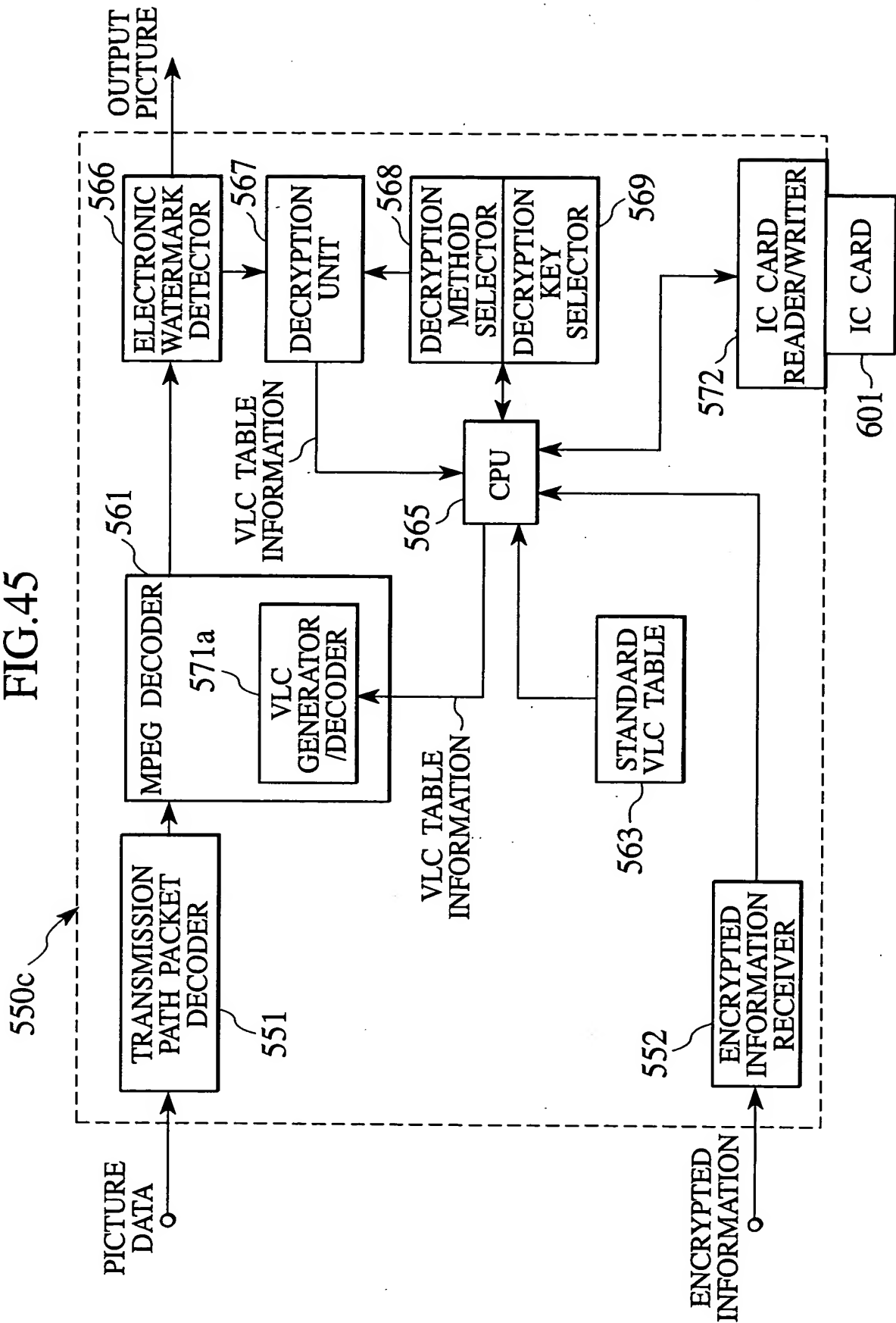


FIG. 46

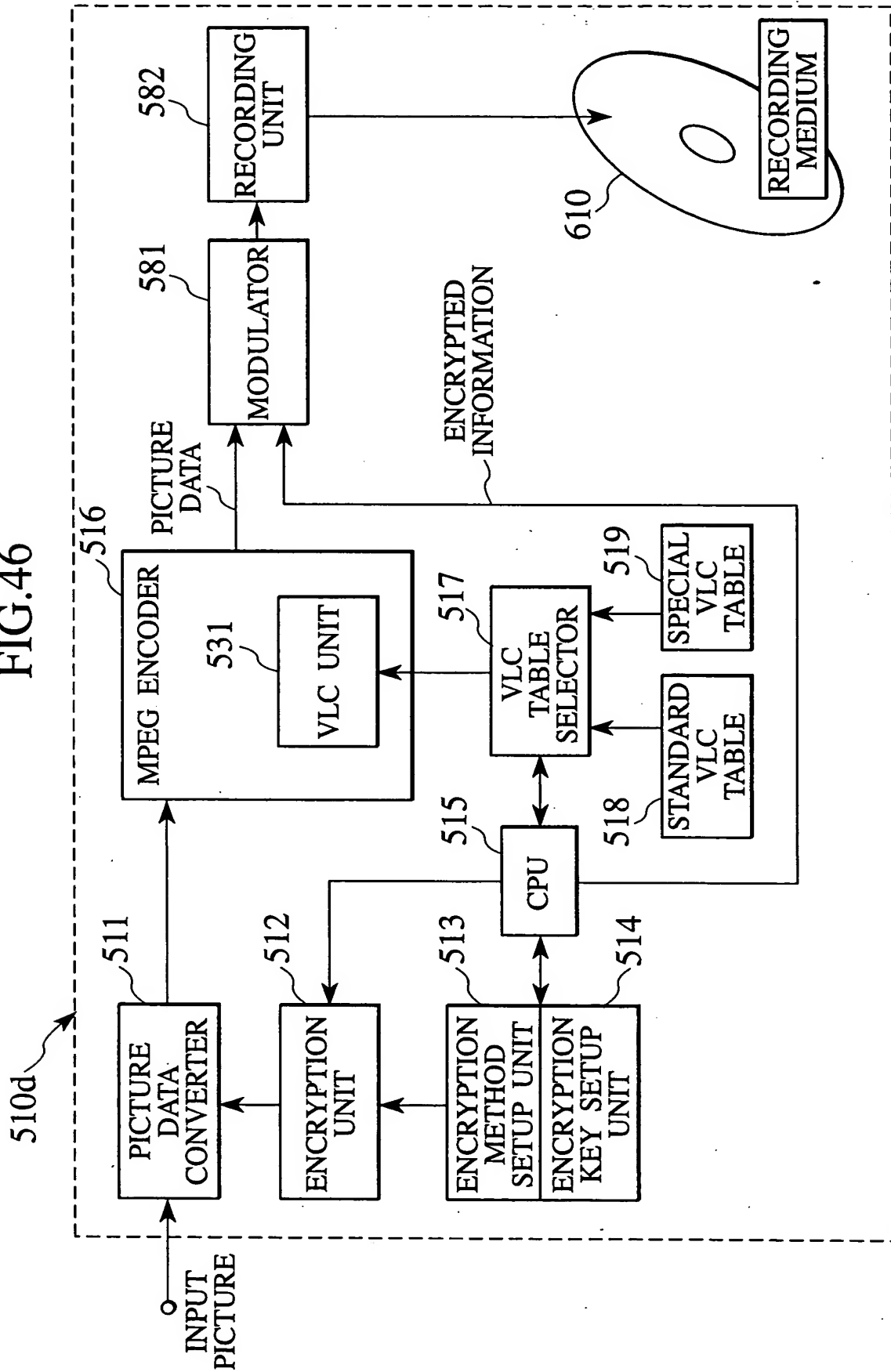
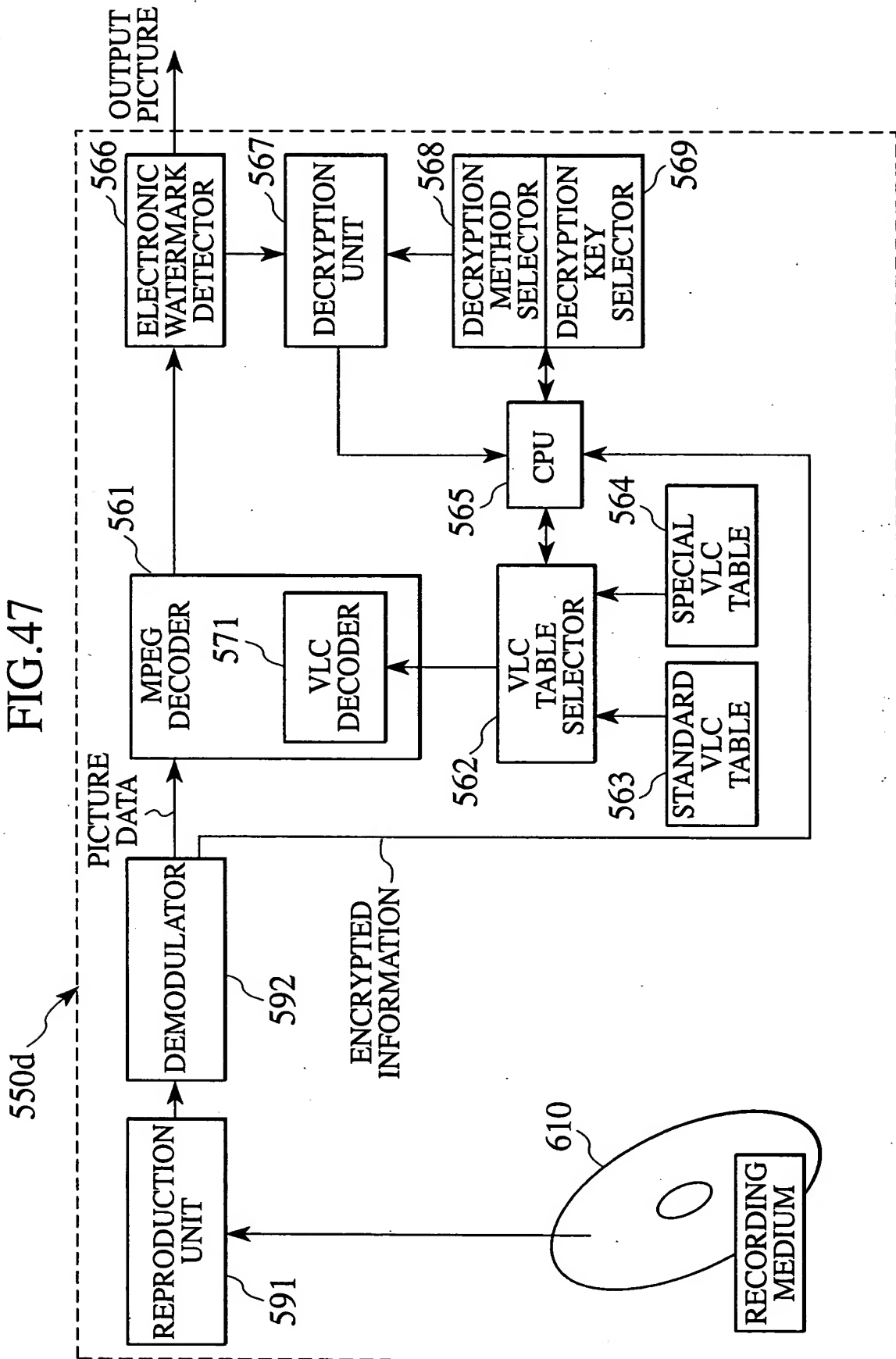


FIG. 47



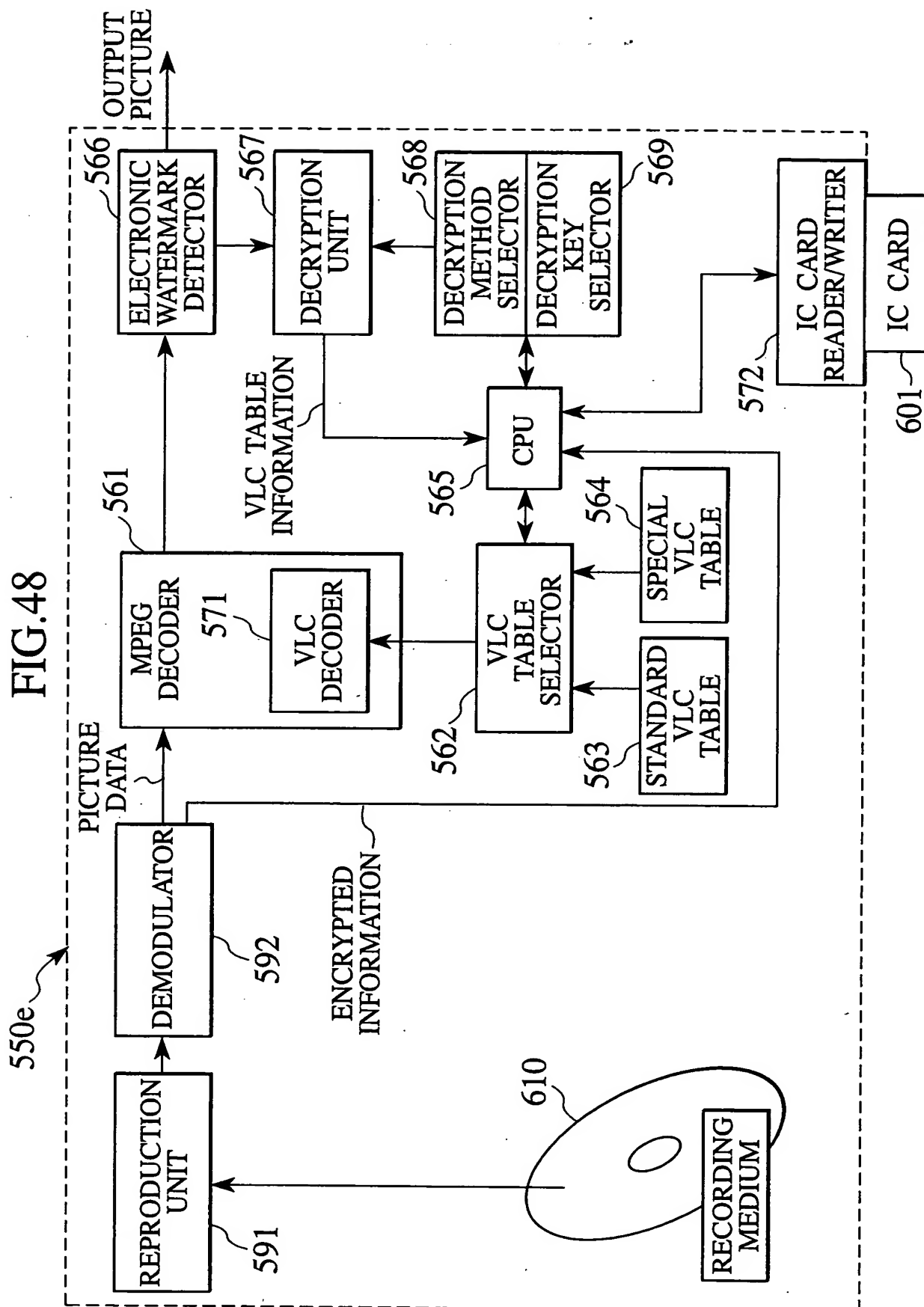


FIG. 49

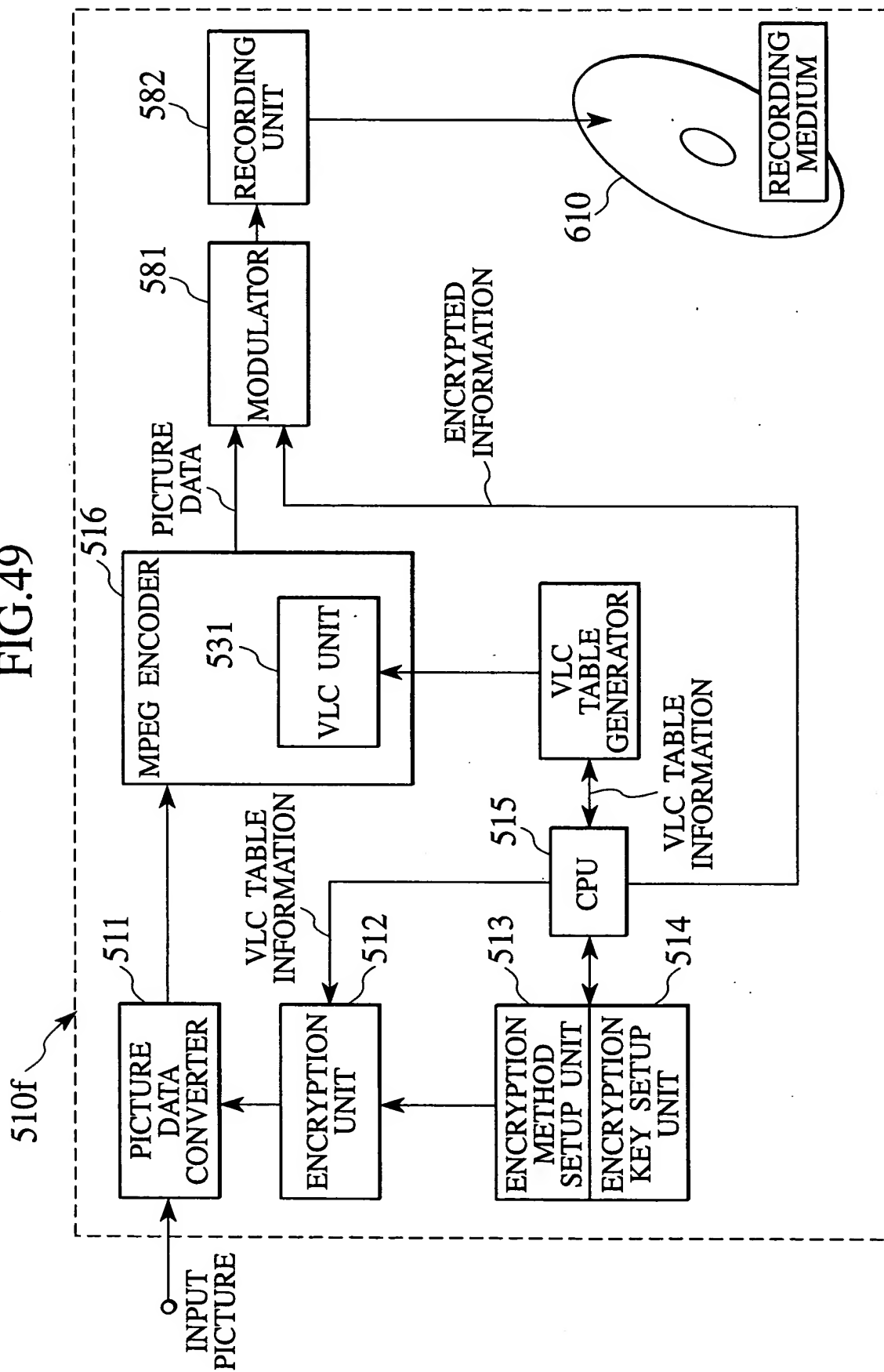


FIG. 50

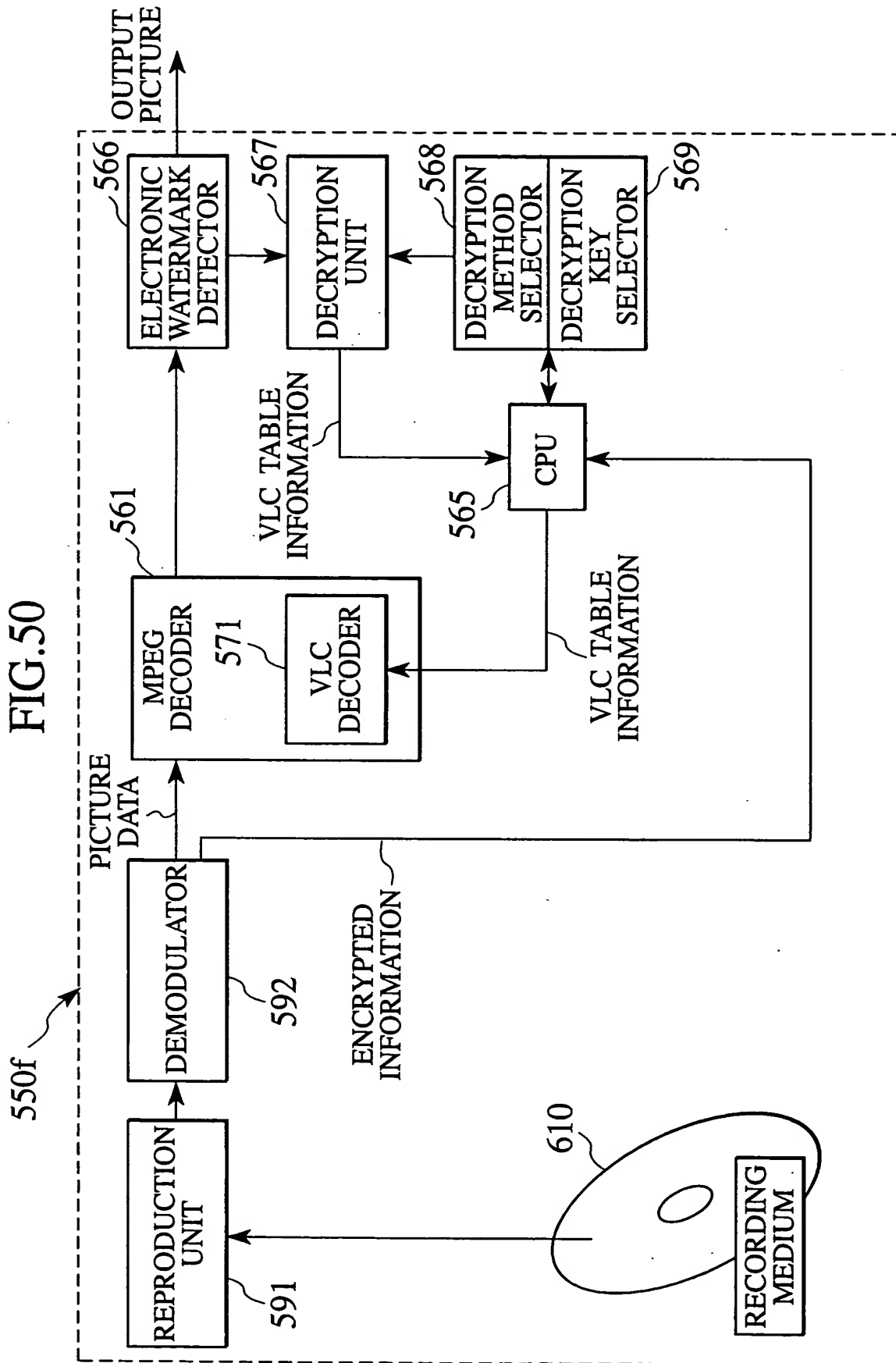


FIG. 51

